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ABSTRACT

Intended to provide information on applied research and development (R&D) priorities in vocational education and on the type of R&D required for each need, this report is divided into (1) an introduction to the problem and procedures, (2) a content analysis of selected documents, and (3) background papers for selected need areas. Chapter 1 discusses the problem of identifying the major needs facing vocational education, selecting those needs most amenable to R&D, and developing appropriate strategies. The procedures followed are described: content analysis of significant documents, verification with a panel of expert consultants, and the development of background papers from specialists in the needed areas selected for additional attention. Chapter 2 presents the results of that content analysis from which fifteen needs were identified. Each need is briefly defined and then documented by reference to relevant legislation and pertinent material from other sources. The eleven background papers in chapter 3 vary considerably in approach, depth, and degree to which they specify the kinds of R&D that should be directed to the needs. They raise important questions in five needs areas: coordination and articulation: curriculum content and instruction: data collection and evaluation: planning: and transition from school to work. (YLB)

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RESEARCH AND DEVELOPMENT
NEEDS OF VOCATIONAL EDUCATION

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FOREWORD

Research and development, if properly directed, can be among the most effective means of dealing with the needs and problems facing vocational education. The selection of research studies and development activities that offer the most leverage on major problems is a complex decision requiring many kinds of information. The National Center, under its contract with the Bureau of Occupational and Adult Education, U.S. Office of Education, is pleased to offer this report which is intended to assist in selecting national priorities for applied research and development. Major needs of vocational education are identified as are those for which research and development are most needed. Particular research and development needs are cited and strategies are suggested.

The National Center expresses its appreciation to the many individuals who contributed to this study and report. Eleven prominent scholars and administrators, whose names appear in the Table of Contents, are due special recognition for their insightful reports on important research and development needs in particular areas. We appreciate, too, the generous assistance of the distinguished consultants who gave invaluable assistance in identifying and clarifying research and development needs: Rupert N. Evans, Marvin F. Feldman, Charles L. Law, Gordon I. Swanson, Grant Venn, George Wallrodt, William D. Woolf, and Robert M. Worthington. Hollie B. Thomas, Allen A. Wiant, and William D. Woolf made valuable contributions in their critical reviews of the manuscript prior to final revision.

Finally, recognition is due to several members of the National Center staff: Morgan V. Lewis directed the study and prepared this report with the assistance of Stephen A. Marcus and Bruce J. Shylo under the general direction of Edward J. Morrison.

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Executive Director
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in Vocational Education

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CHAPTER 1

INTRODUCTION

One of the direct charges to the National Center for Research in Vocational Education under Public Law 94-482 is to "develop and provide information to facilitate national planning and program development in vocational education". (Sec. 171 (a) (D)). One of the specific tasks under this general charge is to provide information on applied research and development priorities in vocational education. This report represents the effort of the National Center to carry out this task. It is important that the nature of the effort is clearly understood. The task was not to set priorities, but, instead, to provide information which will be useful to the U.S. Office of Education in setting national priorities. This distinction was, at times, a difficult one to maintain. Obviously it was impossible to provide, or even to know, all the information that would be useful in setting priorities. All that could be provided was the information judged most cogent and useful. The information in this report is thus carefully selected.

This distinction is stressed so that this report does not raise expectations it cannot fulfill. This report will not describe the research and development needs of vocational education but some of these needs. The manner in which these needs were identified and the kinds of research that might be directed to them are described in detail below.

Before presenting this description, an overview of the organization of the chapter and the remainder of the report may be useful. The report contains three main chapters and an appendix. This first chapter is an introduction and presents the nature of the problem to which this study was addressed and the procedures followed to examine the problem. The problem was essentially to identify the major needs facing vocational education, to select from among those needs the ones most amenable to research and development, and to develop strategies appropriate to these needs. The procedures followed consisted of a content analysis of significant documents, verification with a panel of expert consultants, and the development of background papers from specialists in the need areas selected for additional attention.

Chapter 2 presents the results of the content analysis of the selected documents. From this analysis a total of fifteen major needs was identified. The documentation is the same for each of the needs. First the legislation relevant to the need is quoted directly from Title II of the Educational Amendments of 1976. Pertinent material from other sources is then summarized. Each of these sources is cited separately; no attempt is made to integrate or compare sources. In fact, this chapter contains no interpretation or discussion; it presents no more than the relevent documentation.

Chapter 3 presents background papers prepared by specialists in the need areas chosen for additional attention. These papers vary considerably in approach, depth, and degree to which they specify the kinds of R & D that should be directed to the needs. This variation reflects to some degree the perspectives of the consultants - an attempt was made to get a mix of both researchers and practitioners - and the time they could devote to the task. It also reflects, however, the charge that was given to the consultants. They were encouraged to go beyond the present state of the art to prepare a "think piece" or working notes instead of a fully developed paper. The intention was that the time the consultants could devote to these papers should be spent in thinking about the needs and the kinds of research that should be directed to the chosen areas. Consequently, many of the papers are not as fully developed as they would be if the consultants had been asked to prepare more finished products. Most do, however, achieve the primary goal of raising important research and development questions.

Statement of Purpose

This report is intended to provide information that will aid the U.S. Office of Education in setting national research and development priorities. It is directed at identifying long-term needs of widespread or national significance. Of particular concern are those problems and needs of vocational education where solutions are impeded by lack of knowledge or adequate tools and for which research and development are necessary and appropriate interventions. By definition, such problems and needs are not amenable to short-term, easy solutions. Instead, they require targeted efforts, necessitating sustained and substantial investments of time and other scarce resources. Such a commitment requires not only that the most pervasive and significant practical problems and needs be carefully selected and documented, but that these problems and needs be amenable to research and development solutions. Moreover, research and development objectives and priorities must be widely understood, accepted, and endorsed by a significant majority of the field to insure their stability so that, in time, effective solutions will be possible.

Thus, the intent and overall strategy of this project is to identify major national needs of vocational education that require research and development, and then to identify and explain the kinds of research and development required for each need. Such identification and explanation is intended to be of use to the Coordinating Committee on Research in Vocational Education, which is developing a plan for establishing national priorities for vocational education research, and to contribute to the coordination of several member agencies. It is expected to be of further direct use in the identification of the "designated" and "independent" studies to be conducted by the National Center and other significant, national research and development initiatives. Indirectly, it should contribute to a variety of research and development initiatives at state and local levels. Several features characterize the strategy for this effort. One is the definition of a need as a discrepancy between what is and what ought to be. Goals and objectives of vocational education were compared with the current reality to identify those discrepancies which define significant needs. Historically it has been difficult to establish a widely accepted set of vocational education needs, partially because of the diversity of values and goals held by those affected by and concerned with vocational education. This report does not attempt to resolve these difficulties or to provide a consensus set of national goals or needs. As the report was prepared, however, the importance of involvement and input from diverse sources was recognized.

A second feature of this effort was its reliance on available sources of information and data. Following the stipulation in the National Center's statement of work, the intent, in general, is to avoid new data collection initiatives--a stipulation somewhat in conflict with the objective of including a variety of individuals affected by or concerned with vocational education. Whenever possible in the selection of panelists or consultants, attempts were made to include individuals with varying professional responsibilities. However, with the limited number of individuals involved in these capacities, no claim is made that those selected are representative of all people concerned with vocational education.

This report is the first in what is seen as a cyclical effort. The strategy in this first year is to analyze currently available sources of information to identify R & D needs. Then, in subsequent years, the plan is to systematically expand and diversify those sources of information and to seek additional means for identifying and selecting research and development needs. Each year's report will provide a reevaluation of status, relative to goals, and update the previous assessments. While subsequent reports may not necessarily recommend an entirely new set of research and development needs each year, they may expand the list as significant new needs are created or detected and, over time, they may note significant progress toward the reduction or elimination of needs. Status and progress assessments will be based on completed work and will not attempt to prejudge the effects of work in progress. These procedures are intended to provide for a fast start-up the first year and continued expansion of scope and capacity in subsequent years. In general, the major operational objectives of this first year effort are to:

1. Identify and assemble information on needs in vocational education.
2. Analyze information and data.
3. Consolidate and verify needs.
4. Select needs requiring research and development.
5. Interpret and explain the principal research and development required for each need.
6. Report interpretations and explanations.

The procedures that were followed to achieve these objectives are described below.

Procedures

Identification of Needs

When confronted with the task of identifying needs, most educational researchers are apt to turn to a survey, but under the terms of the National Center contract, the Information for Policy and Planning Function is precluded from generating new data bases. This has been interpreted as a restriction on conducting new surveys if existing data are available. Fortunately the National Center had available two recent national surveys of needs in vocational education to draw upon (Adams, 1977, and Morrison, 1976). These were both attempts to identify the perception of different groups of vocational educators (state directors, large city directors, RCU directors, teachers, etc.) concerning the most pressing needs in the field.

Working from these studies, a content analysis technique was developed that could be used to code the major topics or recurring themes in the documents examined. This system was developed by tallying the major content areas and grouping the areas where appropriate. The system that was developed to code the two needs studies was then tested against Title II of the Educational Amendments of 1976.

When the coding system was judged adequate to accommodate the complexities of the legislation, it was reviewed by selected staff members of the National Center for internal consistency and clarity. The revisions suggested by the review were incorporated and the revised system was applied to several more documents which are listed in Chapter 2. The coding categories which were finally used are shown as the general needs and specific subneeds in the documentation of needs in Chapter 2.

The final coding system yielded a set of fifteen general needs in vocational education which are listed in Chapter 2. Figure A-1 in the Appendix shows the frequency with which the fifteen needs were coded in the documents that were analyzed. Most of these major needs had a number of subneeds, and Tables A-1 through A-4 in the Appendix present a detailed summary of the coding of the needs and subneeds by document.

Verification of Needs

The fifteen needs were reviewed by two panels: one had been assembled to assist the National Center staff in planning a report on the status of vocational education; the second was assembled specifically to review the fifteen needs. The first panel consisted of a staff member from the National Advisory Council on Vocational Education and one from the U.S. Office of Education, a state director, and three researchers. The second panel consisted of two former associate commissioners of what is now the Bureau of Occupational and Adult Education, one former and one current state director, a staff member and an appointed member of the National Advisory Council on Vocational Education, and two leading scholars of vocational education. Each of these panel members reviewed the list which is presented in Chapter 2 and agreed that these are durable and pervasive needs. Several of the panelists also added needs.

The members of the second panel also selected from among the 15 needs the five that they considered the most important for future R & D efforts. In making these judgments they were asked to balance the importance of the need and the potential impact R & D could have. When the responses were received from the panel, each member was contacted and interviewed about the needs selected for R & D. The interviews focused on the kinds of issues underlying the needs that the panelist would like to see explored. Summaries of four of these interviews are presented in the Appendix.

The information received from the panelists was then considered with the documentation of needs that had been developed from the content analysis of the legislation and other literature. From these two sources the following five needs were selected for further examination: coordination, curriculum content and instruction, data collection and evaluation, planning, and transition from school to work.

The criteria used to select these five were as follows:

1. The needs were nominated by at least three of the eight panelists. (All but one were nominated by four.)
2. The needs did not require more resources or better administration and coordination of existing resources.

(The need "coordination" does not fully meet this criterion; however, it was selected by five of the eight panelists and appeared frequently in the other documentation.)

3. The needs can be addressed by existing research methods and technology.
4. Research and development efforts directed to the needs have the promise of yielding knowledge or tools of direct use to the field.

Once these five need areas were selected, literature citations and peer nominations were used to identify consultants who could develop background papers on R & D within the selected areas. In choosing consultants an effort was made to achieve a balance between academic researchers and individuals with direct administrative responsibility. In most of the need areas this was achieved. Overall, the total was six academics, five administrators and one independent consultant. The names, titles and affiliations of these consultants are given on the section headings for the papers which are presented in Chapter 3. Since the needs are so broad, most of the consultants addressed specific subneeds. These had been identified from the documentation and interviews with verification panelists as among the most pressing concerns in the general need area.

CHAPTER 2

MAJOR NEEDS OF VOCATIONAL EDUCATION*

This chapter summarizes selected documents which were analyzed to identify major needs in vocational education. It was considered essential to have some agreement concerning the most important needs facing the field before attempting to determine which are most appropriate for research and development efforts. In conducting the content analysis a need was defined as a discrepancy between actual and desired levels of performance. In many of the documents that were analyzed, this discrepancy had to be inferred. The analysis yielded the following list of 15 need areas; the list is alphabetic and no priority order is implied:

1. Availability of Programs
2. Career Development Programs
3. Community (citizen) Involvement, Participation and Communication
4. Coordination
5. Curriculum Content and Instruction
6. Data Collection and Evaluation
7. Equipment and Facilities
8. Funding
9. Interaction with Employers/Unions
10. Personnel Development
11. Planning
12. Research and Development
13. Sex Discrimination, Sex Stereotyping/Equal Opportunity
14. Special Needs Groups
15. Transition From School to Work

The documents analyzed to identify these needs were selected either because of their significance, e.g., Title II of the Education Amendments of 1976, or because they represented systematic attempts to determine the major needs and problems facing the field.

The format for reporting the needs and relevant content analyses is consistent throughout the chapter. Each need area is first stated, e.g., "availability of programs," "career development programs," etc. This is followed by a general need statement and specific need statements where appropriate. Relevant citations from the Education Amendments of 1976 appear with most need statements. Since some topics are mentioned many times in the law, only the major reference is specifically quoted. Analyses or pertinent documents for each need area follow immediately in a section titled "Other Sources." The sources used and the methods used to cite them are as follows:

---

*This chapter was prepared by Bruce J. Shylo, Graduate Research Associate, The National Center for Research in Vocational Education.

Title II of the Education Amendments of 1976 (PL 94-482) is cited as legislative authority - 1976 Amendments. The numbers following the citation are the section and paragraph numbers.

Morrison, E. J. "National Survey of Vocational Education Needs." Mimeographed. Columbus, OH: The Center for Vocational Education, The Ohio State University, 1976.

This was a national survey of local and state vocational educators conducted by the Center in 1976 and is cited as Morrison, 1976. Needs were ranked on the basis of the mean group rating for all respondents.

National Association of Manufacturers. Secondary Vocational Education. NAM Public Policy Report. New York: Author, 1975.

These are the conclusions and recommendations of the NAM education committee task force after its in-depth study of secondary vocational education. It is cited as NAM, 1975.

Adams, Kay A. "National Large Cities Vocational Education Needs Study." Mimeographed. Columbus, OH: The Center for Vocational Education, The Ohio State University, 1977.

This is a national assessment which identifies needs for vocational education programs in large cities and ranks them according to their mean ratings as perceived by urban vocational educators. Participants included individuals at the district level in 106 large cities. It is cited as Adams, 1977.

Ellis, M. L. *A Report to the Nation on Vocational Education*. Flagstaff, AZ: Northern Arizona University, 1975.

> In this report Ellis compares the performance of vocational education to the intent of the 1968 Vocational Education Amendments. It is cited as Ellis, 1975.

Alabama, Arizona, Idaho, Kansas, Maine, New Jersey, Texas, Virginia, Wisconsin and Wyoming Annual and Five Year (1978-1982) State Plans for Vocational Education.

> One State Plan per USOE Region was reviewed. Using random numbers tables, plans were randomly selected from an alphabetized list of states within each USOE Region. They are cited as State Plans, 1977.

The Comptroller General of the United States. *What is the Role of Federal Assistance for Vocational Education?* Washington, DC: General Accounting Office, 1974.

> This report focuses on selected aspects of secondary and postsecondary vocational education in seven states and discusses some underlying factors that inhibit attainment of objectives. It is cited as Comptroller General of the United States, 1974.

National Advisory Council on Vocational Education. *Review of GAO Report on Vocational Education.* Washington, DC: Author, 1975.

> This report analyzes the specific issues raised in the Comptroller General's report and suggests how the problems it cites should be dealt with. It is cited as NACVE, 1975.

National and State Advisory Councils on Vocational Education. *The Impact of the Vocational Education Amendments of 1968*. Washington, DC: Author, 1974.

> This report was prepared for Congressional Oversight Hearings concerning what form new federal legislation should take. It is cited as NACVE, SACVE, 1974.

Committee on Vocational Education Research and Development. Assessing Vocational Education Research and Development. Washington, DC: National Academy of Sciences, 1976.

> This document examines the research and development activities sponsored by the Office of Education under the authority of the Vocational Education Act of 1963 as amended in 1968, and recommends changes in R & D policies and programs for the coming decade. It is cited as COVERD, 1976.

Jennings, John F.; and Radcliffe, Charles W. Commentary on Legislation Affecting Vocational Education Research and Development. Occasional Paper No. 27. Columbus, OH: The Center for Vocational Education, The Ohio State University, 1977.

> This was a paper delivered to a staff development seminar at the Center in March, 1977, and addresses the Vocational Education Amendments of 1976 as they affect vocational education research. It is cited as Jennings and Radcliffe, 1977.

Halperin, Samuel. Emerging Education Policy Issues in the Federal City: A Report from Washington. Occasional Paper No. 42. Columbus, OH: The National Center for Vocational Education, The Ohio State University, 1978.

> This paper was delivered to a staff development seminar at the Center in January, 1978. It contains criticisms of vocational education that ten key congressional staff members have heard members of Congress express in the recent past. It is cited as Halperin, 1978.

The documentation for each of the fifteen needs constitutes the rest of this chapter, but one further note should be added: Because of the massive amounts of data covered in this report, it was not feasible to provide specific page citations for all the findings summarized in the text. The original documents, however, have been coded and specific citations are available upon request to the National Center.

Availability of Programs

General Availability - Any individual who is interested in vocational education training should have access to appropriate programs. (Note: This category involves having appropriate programs available within reasonable travel distance. It does not include providing services to enable persons with special problems to succeed in vocational programs; these services are listed as a separate need.)

Create or expand availability for specific groups: (legislative authority - 1976 Amendments)

1. Adults - course or courses for persons who have completed or left high school to prepare them to enter, re-enter or to progress in the work force. The amendments state,

   > It is also the purpose of this part to authorize Federal grants to States to assist them . . . so that persons of all ages in all communities of the State, those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market, but need to upgrade their skills or learn new ones, . . . will have ready access to vocational training or retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training. (Sec. 101)

2. Postsecondary - distinguished from adult by an organized program of study

   > It is also the purpose of this part to authorize Federal grants to States to assist them . . . so that persons of all ages in all communities of the State, . . . and those in postsecondary schools, will have ready access to vocational training or retraining which is of high quality, . . . (Sec. 101)

3. Unemployed, out-of-school youth -

   > For each fiscal year, at least 15 per centum of each State's allotment under section 103 shall be used to pay 50 per centum of the cost of vocational education for . . . (2) persons who have completed or left high school and who are not described in paragraph (1), (Sec. 101 (c) (2))

4. Underemployed youth and adults who seek to progress in a career or change to a new career path

> It is also the purpose of this part to authorize Federal grants to States to assist them - ... so that persons of all ages in all communities, ... those who have already entered the labor market, but need to upgrade their skills or learn new ones, ... will have ready access to vocational training or retraining which is of high quality ... (Sec. 101)

5. Removing locational barriers for rural or inner city residents

> Funds available to the States under section 130 (a) may be used for contracts, as part of the comprehensive plans of program improvement mentioned in section 131 (a), for the support of exemplary and innovative programs, including-
>
> (1) programs designed to develop high quality vocational education programs for urban centers with high concentrations of economically disadvantaged individuals, unskilled workers, and unemployed individuals;
>
> (2) programs designed to develop training opportunities for persons in sparsely populated rural areas and for individuals migrating from farms to urban areas; ...
>
> Funds ... may be used for the construction, equipment, and operation of residential schools to provide vocational education ... In using funds available under section 120 for this purpose, the States shall give special consideration to the needs of large urban areas and isolated rural areas ... (Sec. 132 (a) (1) & (2)

6. Women

> Any State desiring to participate in the programs authorized by this Act shall also assign such full time personnel as may be necessary to assist the State board in fulfilling the purposes of this Act by - ... (H) assisting local educational agencies and other interested parties in the State in improving vocational education opportunities for women; ... (Sec. 104 (b) (1) (H)

Other Sources

High priority needs, according to consensus of all respondent groups, included improving and expanding vocational education to meet the needs of adults and improving and expanding vocational education to meet the needs of handicapped individuals. Medium priority needs included improving and expanding vocational education to meet the needs of disadvantaged individuals and improving and expanding vocational education to meet the needs of individuals who are in sparsely populated rural areas. (Morrison, 1976)

In her study, Adams reported fifty needs statements for vocational education in large cities. Each statement was rated on a five point scale and the mean ratings were ranked from 1 (highest need) to 50 (lowest need). The need statement, "Availability of vocational centers and tactics for attracting students to them" (p. 114) was ranked 39.5 out of 50 (medium low) whereas vocational programs for early school leavers and unemployed youth was ranked 43.5 (lower). (Adams, 1977)

In reporting enrollment trends during the 1971-1974 period, Ellis documented the growth of vocational education, particularly in the areas of adult and postsecondary programs. She felt that technological changes would increase the demand for more sophisticated preparation for the world of work and that recent attention to continuing education and life-long learning would encourage increased offerings at the postsecondary and adult levels. (Ellis, 1975)

One half of the 10 state plans which were reviewed included a general statement about increasing the availability of vocational education programs for those desiring access to them. A similar number listed expansion of postsecondary programs as a goal. A majority of the state plans included goal statements relative to making more programs available to unemployed, out-of-school youth. Removing locational barriers was also cited as a need by almost one half of the state plans. The need areas of women, underemployed youth, and adults received very little attention. (State Plans, 1977)

In assessing the impact of the 1968 Vocational Education Amendments, the National and State Advisory Councils on Vocational Education called for the continued expansion of vocational education programs. They cited the high youth unemployment rate and the waiting lists of students anxious to learn skills but unable to enroll in programs as reasons for continued federal support for the expansion and strengthening of the vocational education system. (NACVE, SACVE, 1974)

The Committee on Vocational Education Research and Development (COVERD) observed that educators are now required to provide equal program opportunities to all students and noted that vocational education has been encouraged to eliminate sex bias from its programs. The committee questioned the extent to which these requirements are being met and asked how vocational education can best serve the disadvantaged. (COVERD, 1976)

One of the common congressional criticisms of vocational education Halperin noted was that "vocational education is too institution-oriented to school-age populations and doesn't care enough about the unemployed and about out-of-school youth. Thus, the nation is forced to create an array of costly job training programs outside the formal educational structure." (Halperin, 1978 p. 12)

Career Development Programs

General - Programs should be developed and implemented to improve the awareness, exploration, planning, and decision-making ability of individuals with regard to career opportunities and career development.

Specific Types of Programs: (legislative authority - 1976 Amendments)

1. Career Education Programs

> ... programs and projects designed to familiarize elementary and secondary school students with the broad range of occupations for which special skills are required, and the requisites for careers in such occupations:... (Sec. 132 (a) (5) (a))

2. Vocational Guidance and Counseling

> Not less than 20 per centum of the funds available to the States under Section 130 (a) shall be used to support programs for vocational development guidance and counseling programs and services which, subject to the provisions of subsection (b), shall include -
>
> (1) initiation, implementation, and improvement of high quality vocational guidance and counseling programs and activities;

(2) vocational counseling for children, youth, and adults, leading to greater understanding of educational and vocational options ...

(5) vocational and educational counseling for youth offenders and adults in correctional institutions;

(6) vocational guidance and couseling for persons of limited English-speaking ability

(7) establishment of vocational resource centers to meet the special needs of out-of-school individuals, including individuals seeking second careers, individuals entering the job market late in life, handicapped individuals, from economically depressed communities or areas, and early retirees; and ... (Sec. 134 (a))

3. Programs to Develop Positive Work Habits

(No legislative reference)

Other Sources

According to a consensus of all those responding to the National Survey of Vocational Education Needs, a high priority need was that of providing comprehensive vocational guidance, counseling, placement, and follow-up services to all who need them. This need statement ranked sixth highest out of forty-eight statements (Morrison, 1976)

In its report, Secondary Vocational Education, the National Association of Manufacturers (NAM) cited three conditions which they felt contributed to the ineffectiveness of some vocational programs - the lack of student familiarity with the "world of work" prior to reaching high school; the lack of program flexibility; and the limited occupational counseling received. NAM issued seven policy statements addressing these conditions, three of which directly relate to career development:

1. All students' learning experiences should include general orientation to the world of work beginning with the elementary grades, ...

2. Secondary vocational education students can be served better by programs which integrate both academic and occupational training into a total education environment so as to provide students with the opportunity to develop social and self concepts, (and) proper work attitudes, ...

6. Parents, students, educators and guidance counselors should become more aware of the critical importance of developing students' occupational orientations to enable them to get jobs and achieve full career potentials. (NAM, 1975 p. 11)

Several high priority needs relative to career development were identified by district level vocational education personnel. Included among the highest ranked ten specific needs for vocational education were:

- counseling prior to enrollment to assist students in clarifying their purpose for enrolling in vocational education and in selecting the right programs (Mean rating ranked 3.5 out of 50)
- allocation of counselor's time so that an adequate percentage is spent in face-to-face counseling with vocational students (Mean rating ranked 5.5)
- counseling for students with negative attitudes toward work, the educational system, themselves and/or others. (Mean rating ranked 9.5)

Other high priority needs cited by district level personnel were: providing systematic counseling for all students; instituting testing programs to include interest and aptitude testing for all vocational students, ninth grade through adult; and providing opportunities for students to develop positive work habits.

Fully 18 percent, or nine of the top fifty ranked needs concern vocational guidance. This finding is consistent with the results of a parallel assessment of national major goal priorities for urban vocational education. Large city directors of vocational education were asked to rate thirty major goals on a three point scale from (1) lower priority, (2) medium priority, to (3) higher priority. Responses to the goals were summarized to provide mean ratings which were then ranked from highest to lowest. Of the ten highest ranked goals, four were related to guidance and counseling. The second highest goal overall was to provide comprehensive guidance and counseling services so vocational students can better select careers and educational programs suited to their interests and abilities. (Adams, 1977)

Ellis reported that the career education movement seems to be gaining momentum nationally. She represented the vocational educator's viewpoint when she said that career education is a way to provide career orientation and exploration experiences and to develop positive attitudes towards work in the elementary and middle school grades. As more academic educators become involved, she sees the dichotomy between academic and vocational education being reduced, which would result in a situation where "education will begin preparing students for vocations as well as avocations." (Ellis, 1975 p. 35)

All 10 state plans that were reviewed call for improving and/or expanding vocational guidance and counseling activities. In several instances particular mention was made of the need to provide guidance services for women, the handicapped, those out-of-school, and for heads of households whose roles are changing. A few plans identified specific career education programs to be implemented. These had to do primarily with integrating career clusters into the curriculum and establishing homemaking education programs for elementary and middle school pupils. (State Plans, 1977)

A finding of the GAO report was that guidance services for students enrolled in vocational education are inadequate. Deficiencies cited included few cooperative arrangements with the system of public employment offices within states, inadequate student exposure to the range of occupational options available, and the academic orientation of school counselors. The report referred to various national and state studies which conclude that more consideration should be given to vocational career planning.(Comptroller General of the United States, 1974)

NACVE responds to the GAO report charge that "occupational guidance has not received adequate attention" by referring to their Sixth Report (1972) which focused entirely on changes needed in guidance and counseling services. They claim that considerable progress has been made in the area of occupational guidance but recognize that much remains to be done. (NACVE,1975)

In making their recommendations to the committee developing the oversight hearings on PL 90-576 (Vocational Education Amendments of 1968), the National and State Advisory Councils reported that a strong federal vocational education law was needed to encourage the continued growth of vocational education, allowing flexibility so that states can best meet the particular needs of their citizens, while retaining some provisions to assure that federal priorities are met. The councils also suggested that the committee raise certain questions. One question directly related to career development programs was, "Should distinctions be made in federal legislation between pre-vocational career education and vocational skill training?" (NACVE, SACVE, 1974, p. 9)

Several findings were reported by COVERD relative to the concept of career education. The committee determined that research has not yet evaluated the effectiveness or established an empirical or theoretical basis for career education. Potential areas of research noted were determining "at what point in a student's education knowledge about jobs and careers should be introduced, when specialized skills should be taught, or how career education can be individualized for students with differing needs and ambitions." In reviewing previous R & D the committee concluded that "vocational education needs more knowledge of how and why people choose and change careers." (COVERD, 1976, p. 12)

Community (Citizen) Involvement, Participation and Communication

General - There should be efforts for greater interaction, involvement and communication with community representatives (not including involvement of employers or labor unions which is listed as a separate need).

Specific types of involvement and communication: (legislative authority - 1976 Amendments)

1. Establishing goals

   The State board shall, ... conduct a series of public hearings, ... in order to permit all segments of the population to give their views on the goals which ought to be adopted in the state plan, . . . (Sec. 107 (a) (2)

2. Development of curriculum (advisory groups)

   The State board shall, ... conduct a series of public hearings, ... in order to permit all segments of the population to give their views on the goals which ought to be adopted in the state plan, including the courses to be offered, the allocations of responsibility for these courses ... (Sec. 107 (a) (2)

   Each eligible recipient receiving assistance under this Act to operate vocational programs shall establish a local advisory council to provide such agency with advice on current job needs and on the relevancy of courses being offered by such agency in meeting such needs. Such local advisory councils shall be composed of members of the general public, especially of representatives from business, industry, and labor; ... (Sec. 105 (g) (1)

3. Evaluation of programs

4. Specific reference to National Advisory Council

   The National Advisory Council on Vocational Education, established pursuant to section 104 (a) of the Vocational Education Act of 1963, in effect prior to the enactment of the Educational Amendments of 1976, shall continue to exist during the period for which appropriations are authorized under this Act. (Sec. 162 (a))

5. Specific reference to State Advisory Councils

   Any state which desires to participate in programs under this Act for any fiscal year shall establish a State advisory council, ... (Sec. 105 (a))

6. Public image - the image that vocational education has in the community should be improved; there should be more effective presentation of the benefits of vocational education.

Other Sources

According to all respondents of the National Survey of Vocational Education Needs,the second highest priority need was to better communicate the benefits and content of vocational education to parents, students, employers, and general educators. Among respondents at the local level, this need statement was ranked number one. (Morrison, 1976)

The NAM report determined that one factor contributing to the inability of vocational education to satisfy the needs of students was, "The negative attitudes of parents, businessmen, and nonvocational educators toward vocational education which influences counselors not to direct students into vocational education except as a last resort." (NAM, 1975, p.8)

Vocational education directors in large cities felt a high priority goal was to "better communicate the content and benefits of vocational education to parents, students, and all general educators." (p. 103) This feeling was reflected in several high and medium priority need statements. District level vocational education personnel thought increasing parental awareness of the goals and opportunities available in secondary and post-secondary vocational programs as compared to college was a high priority need. Up-dating the image of vocational education, increasing the awareness of counselors about vocational education programs, and improving general community awareness of available program offerings were all perceived as medium needs. (Adams, 1977)

In Ellis's view the National and State Advisory Councils have met the intent of the 1968 Amendments to bring about citizen participation in the establishment of goals for vocational education and in the implementation of programs. The National Advisory Council, she reported, has been an effective force, insuring that general public concerns are expressed with regard to the national vocational education program. Although she recognized the valuable contribution made by SACVEs in advising State Boards for Vocational Education and in evaluating vocational education programs, services, and activities, she cautioned against allowing them to assume administrative responsibility for programs. (Ellis, 1975)

All of the ten state plans provided for a state advisory council and many mentioned local advisory councils. Only one, however, listed increased community involvement as a goal or objective for the coming years. It made specific reference to involving community members in establishing goals. (State Plans, 1977)

GAO was generally critical of state advisory councils, which it characterized as being unrepresentative of their constituencies and not integrated into the planning process. These state councils feel, however, that they should be involved earlier and more significantly in the planning process. Also noted was the need for state agencies to provide guidance to LEA's regarding the appropriate role and function for advisory committees. GAO recommended to the Secretary, HEW, that the Department should:

> expand its effort to enforce the requirement that all local and State education agencies, in planning vocational programs, identify the needs of public and private business, industry, labor, and students and that those needs be considered the primary basis for decision making about provision of vocational services supported by VEA
> (Comptroller General of the United States, 1974, p. 35)

NACVE responded to the GAO charge that advisory council evaluations are limited by contending that SACVEs have borne most of the responsibility for prodding state boards of vocational education to comply with the requirements of the law. The NACVE review maintained that the state councils, even with severe funding limitations, have been an effective voice for the needs of the people. The main lament of the state councils was that they have no statutory enforcement power. (NACVE, 1975)

The state advisory councils viewed themselves as autonomous, as being consulted on relevant matters, and as the body whose recommendations were implemented. State directors of vocational education, once antagonistic toward the councils, have been moved to commend them for their effectiveness in determining vocational education "program needs and effectiveness." Although generally satisfied with the sections of the legislation which established them, some councils expressed a desire for stronger wording in the law which would mandate that they review the extent to which state plans are actually implemented and allow them to enforce compliance where serious discrepancies exist. (NACVE, SACVE, 1974)

COVERD recommended that any process for identifying national or state R & D priorities should involve advisory groups that represent the clients of vocational education, including students, employees and employers, and professionals in vocational education. They further recommended that the terms of advisory group members be sufficiently long to allow setting long-term priorities. The process should be well publicized so that those wishing to participate can do so. (COVERD, 1976)

In discussing the current (Carter) Administration's educational leanings, Halperin noted an "encouragement for process-oriented requirements." Thus, Halperin thought that new legislative proposals might encourage school-wide and district-wide needs assessments to increase local involvement and to highlight different needs and prescriptions for the subgroups served by various schools.

Halperin also noted that while congressmen look with favor on vocational programs in their home districts, they tend to criticize vocational education in general. (Halperin, 1978)

Coordination

General - Vocational education should be coordinated with academic education to enhance relevance and there should be greater articulation across post-secondary, adult, and Department of Labor training programs. (legislative authority - 1976 Amendments)

> Funds available to the States under section 130 (a) may be used for contracts, as part of the comprehensive plans of program improvement mentioned in section 131 (a), for the support of exemplary and innovative programs, including - ... (4) establishment of cooperative arrangements between public education and manpower agencies, designed to correlate vocational education opportunities with current and projected needs of the labor market;... (Sec. 132 (a) (4)

> Any State desiring to receive the amount for which it is eligible for any fiscal year pursuant to this Act shall, through its State board, submit to, and maintain on file with, the Commissioner a general application providing assurances - ... (4) that funds will be distributed to eligible recipients on the basis of annual applications which - ... (C) describe how the activities proposed in the application relate to manpower programs conducted in the area by a prime sponsor established under the Comprehensive Employment and Training Act of 1973, if any, to assure a coordinated approach to meeting the vocational education and training needs of the area or community, ... (Sec. 106 (a) (4) (C)
>
> The annual program plan and accountability report shall be submitted to the Commissioner ... This plan and report shall contain: ... (1) planning provisions which - ... (C) show the results of the - ... (i) coordination of programs funded under this Act with manpower training programs funded under the Act;" (Sec. 108 (b) (1) (C) (i))

Other Sources

Respondents to Morrison's needs survey gave high priority status to two goals related to coordination. The first of these was the need to provide opportunities for all vocational students to acquire the basic skills required for course work and jobs. The second was the need to coordinate comprehensive guidance, counseling, placement, and follow-up services with business, industry, service agencies, and manpower information systems. Increasing cooperation with related education areas (e.g. industrial arts, career education, academic subjects, etc.), and increasing cooperation among the various levels and departments of vocational education were seen as medium priority needs. (Morrison, 1976)

NAM declared that, "secondary vocational education students can be served better by programs which integrate both academic and occupational training into a total environment education to provide students with the opportunity to develop social and self-concepts, proper attitudes, as well as general occupational education rather than over specialized training." (NAM 1975, p. 11)

District vocational education personnel felt that one of the highest ranked specific needs for vocational education in large cities was "coordination between vocational and academic curricula so that academic courses emphasize vocational applications and academic skills are improved within vocational courses." (p. 111) They also expressed a desire for greater cooperation between academic and vocational teachers. (Adams, 1977)

Ellis saw the introduction of the career education concept as having positively affected the integration of academic and vocational education but scant data exist to support this claim. Ellis cited increased vocational education enrollments at the post-secondary level as an encouraging trend. In considering the proper mix between vocational education and manpower programs, Ellis reported that manpower programs should complement vocational education programs in serving those segments of the population which cannot be adequately served by the present vocational education system, e.g. those unable to succeed in vocational education programs, those requiring training stipends, etc. (Ellis, 1975)

The issue of coordination was addressed in several of the ten state plans which were reviewed. For the most part, they spoke of the need for greater communication between secondary and post-secondary vocational programs. One plan, for example, addressed articulation as it relates to the provision of programs for special subpopulations. Many state plans cited improving coordination with manpower training programs as a goal. (State Plans, 1977)

The GAO report made several recommendations to the Secretary of HEW relative to coordination. They included recommendations that:

1. HEW expand efforts to have SEAs and LEAs establish working partnerships among all institutions providing occupational training at all levels--secondary, post-secondary, adult. (p. 35)
2. HEW clarify the roles of various organizational entities within HEW involved in occupational training and implement some mechanism by which these jurisdictions can engage in coordinated comprehensive planning. (p. 35)
3. HEW should require that LEAs in their application to SEAs describe and document the nature and extent of their cooperative efforts with other sources of training and employment. (p. 105)
4. HEW should work with states to increase flexibility in vocational education training arrangements, through such mechanisms as, ... provision of vocational training in nonpublic facilities so that more people can be trained in more occupational categories. (p. 105)

5. HEW should develop and fund a project ... to seek out successful examples of flexible arrangements and develop models for use by states and LEAs in increasing flexibility in vocational training arrangements. (p. 66)
6. HEW should develop an evaluation study to identify Federal and State statutes and administrative procedures that limit the use of community training resources, ... (p. 66)
7. Congress should establish a set-aside requirement for cooperative arrangements to expand vocational offerings and strengthen programs through use of other public training facilities or nonpublic training resources. (p. 66)
8. Public educational institutions should explore the potential of utilizing DOD training facilities. (Comptroller General of the United States, 1974)

The Council recognized that the coordination of both secondary school with post-secondary school vocational education and vocational education programs with other community and area human resource programs remains a continuing problem. Although the Council reported little progress in the area, it cautioned its critics against being too severe by stating that "calls for reform must be tempered with a realistic appraisal of the problems inherent in all such efforts, which may be seen by many organizations as an attempt to limit their autonomy." (NACVE, 1975, p. 10)

COVERD reported that certain legislation and the lack of administrative coordination of the various Parts (C, D, & I) of the federally administered level research and development program has hindered progress. The Committee also found a lack of coordination within the National Network for Curriculum Coordination and between that Network and other researchers. The Committee reinterated the continuing need to integrate vocational and other curriculum elements. (COVERD, 1976)

Jennings and Radcliffe discussed how one intent of the 1976 Amendments is to coordinate the R & D efforts of the Office of Education, National Institute of Education, and the Fund for the Improvement of Post-Secondary Education. They also commented on Congress' unhappiness about resources being wasted and stressed the importance of coordination among agencies. (Jennings and Radcliffe, 1977)

Halperin reported the current Administration moving in the direction of improving coordination among federal, state, and local programs. He saw a movement toward a better integration of those federal programs designed to advance the welfare of groups inadequately served at the state and local level. He discussed the need to improve coordination between traditional educational programs and YEDPA and reported that several members of Congress think that vocational education has resisted coordination with other components of education and has spent most of its energy protecting turf. (Halperin, 1978)

Curriculum Content and Instruction

General - Curriculum and instruction should be upgraded and improved. Specific Recommendations: (legislative authority - 1976 Amendments)

1. Consumer and homemaking education - programs in consumer education, food and nutrition, family living and parenthood education, child development and guidance, housing and home management, and clothing and textiles should be instituted.

> From the sums made available for grants under this subpart pursuant to sections 102 and 103, the Commissioner is authorized to make grants to states to assist them in conducting consumer and homemaking education programs. (Sec. 150 (a))
>
> Grants to states under this subpart may be used, ... for (1) educational programs in consumer homemaking education consisting of instructional programs, services and activities at all educational levels for the occupations of homemaking including but not limited to, consumer education, food and nutrition, family living, and parenthood education, child development and guidance, housing and home management (including resource management), and clothing and textiles which ... (Sec. 150 (b)
>
> encourage elimination of sex stereotyping in consumer and homemaking education by promoting the development of curriculum materials ... (Sec. 150 (b) (B)
>
> give greater consideration to economic, social, and cultural conditions and needs, especially in economically depressed areas, and such courses may include where appropriate bilingual instruction;... (Sec. 150 (b) (C)

encourage outreach programs in communities for youth and adults ... (Sec. 150 (b) (D))

emphasize consumer education, management of resources, promotion of nutritional knowledge and food use, and parenthood education to meet the current societal needs, ... and other means of assuring quality in all homemaking education programs such as ... curriculum development ... (Sec. 150 (b) (F))

2. Energy education - there should be training of coal miners, supervisors, and technicians in the fields of coal mining, solar energy, and alternative energy sources.

   Funds available to states under section 120 may be used to make grants to post-secondary educational institutions to carry out programs for the training of miners, supervisors, technicians (particularly safety personnel), and environmentalists in the field of coal mining and coal mining technology, including acquisition of equipment necessary for the conduct of such program. (Sec. 123 (a) (1))

   Funds available under section 120 may also be used to make grants to post-secondary educational institutions to carry out programs for the training of individuals needed for the installation of solar energy equipment, including training necessary for the installation of glass paneled solar collectors and of wind energy generators, and for the installation of other related applications of solar energy. (Sec. 123 (b))

3. Relevance - training should be for today's labor market and for new and changing occupations.

   ... the State shall, in considering the approval of such applications, give priority to those applications which - ... propose programs which are new to the area to be served and which are designed to meet new and emerging manpower needs and job opportunities in the area and, where relevant, in the State and the Nation; and ... (Sec. 106 (a) (5) (A) (11))

   Funds available to the States under section 130 (a) may be used for contracts for the support of curriculum development projects, including -
   (1) the development and dissemination of vocational education curriculum materials for new and changing occupational fields ..." (Sec. 133 (a) (1))

> Funds available to the States under section 130 (a) may be used for support of State research coordination units and for contracts by those units pursuant to comprehensive plans of program improvement involving - ...
>
> (3) improved curriculum materials for presently funded programs in vocational education and new curriculum materials for new and emerging job fields ...
>
> (4) projects in the development of new careers and occupations ... (Sec. 131 (a) (3) and (4))

Other Sources

According to Morrison's respondents, the third highest priority need was ensuring the relevance of vocational curricula to current job opportunities and practices through effective methods for identifying, selecting, and updating content. Other needs which were ranked fairly high included: individualizing teaching and learning (e.g. curriculum) to meet the needs of different kinds of learners, developing curricula which prepare students for clusters of up-to-date occupations, increasing the flexibility of vocational programs, and improving the curriculum materials used by vocational students and educators. (Morrison, 1976)

In its study of secondary vocational education, NAM cited several weaknesses which included: too few students receiving occupational training in areas where jobs are available or expected to be available, and lack of program relevance. The poor placement rate of graduates in the area for which they were trained was cited as an indicator of the lack of program relevancy. NAM recommended that "the diverse educational and occupational needs of vocational education students can be satisfied better by a broader, more flexible range of programs." (NAM, 1975)

Two medium high needs for vocational education, as perceived by district level personnel, are, first, the systematic initiation of new vocational programs in emerging occupations and fields with expanding employment opportunities, and, second, the development and use of competency-based instruction. Mentioned as a fairly low priority need was vocational education curricula and instructional materials for use in open entry/open exit situations. (Adams, 1977)

Ellis reports that even with limited investment, strides have been made in the design and development of curricula for new and emerging technologies and in modifying existing curricula for ongoing programs. She comments favorably on the cluster concept in curricular design, seeing it as holding great promise for vocational education. (Ellis, 1975)

All of the ten state plans reviewed have made provision for upgrading and/or improving curriculum and instruction. Five addressed the issue of relevance while seven made specific reference to developing programs in consumer and homemaking education. A few state plans intended to implement energy education as part of their post-secondary vocational education program offerings. (State Plans, 1977)

The GAO report found that vocational training or retraining oftentimes is not relevant in light of actual or anticipated opportunities for gainful employment. The report recommended to the Congress that federal vocational funds directed to LEA's for programs be used only for those skill areas for which existing or anticipated job opportunities can be demonstrated. (Comptroller General of the United States, 1974)

NACVE responded to the charge that "student enrollments have not been aligned with employment opportunities" by recognizing the lag of vocational education courses in adjusting to changes in the labor market. This they attributed mainly to lack of proper planning. NACVE, however, questioned basing the findings solely on placement data. It also contended that objectives other than training for employment should be part of vocational education, for example, motivation for increasing basic skills, and reducing school dropouts. NACVE, 1975)

COVERD identified as a major problem in vocational education the development of means for keeping curricula up to date and responsive to the needs of students. This relates to the need for training students for occupational versatility. The Committee was critical of curriculum development which is totally directed toward a small proportion of students and instructors. They called for adequate curriculum development in all areas, stressing the necessity for developing a highly flexible and generalizable curricula. (COVERD, 1976)

Some criticisms of vocational education voiced by members of Congress include: "vocational education provides irrelevant skills training for today's job market and especially for tomorrow's economy," and "vocational education insists on maintaining training in the old categories (e.g. T & I, Agriculture, etc.) as opposed to new job areas as urged by Congress."

In translating the Carter Administration's legislative themes, Halperin identified individualized educational plans for each student as a coming initiative. (Halperin, 1978, p. 11)

Data Collection and Evaluation

General - There is a need for more and better data on inputs and processes of vocational education, better evaluation of effectiveness, and better access to and utilization of data, (legislative authority - 1976 Amendments)

> The Commissioner and the Administrator of the National Center for Educational Statistics shall . . . jointly develop information elements and uniform definitions for a national vocational education data reporting and accounting system. (Sec. 161 (a) (1)
>
> There is hereby established a National Occupational Information Coordinating Committee which shall ... (B) develop and implement by September 30, 1977, an occupational information system to meet the common occupational information needs of vocational education programs...which system shall include data on occupational demands and supply ... (Sec. 161 (b) (1) (B)
>
> Any State desiring to participate in the programs authorized by this Act shall also assign such full-time personnel as may be necessary to assist the State board in fulfilling the purposes of this Act by - (B) gathering, analyzing, and disseminating data on the staus of men and women, students and employees in the vocational education programs of that State; (Sec. 104 (b) (1) (B)
>
> Each State shall, during the five-year period of the State plan, evaluate the effectiveness of each program within the State being assisted with funds available under this Act;... (Sec. 112 (b) (1) (A)
>
> Funds available to the States ... may be used for... projects to evaluate the operation of programs for the training, development and utilization of public service aides, particularly their effectiveness in providing satisfactory work experiences and in meeting public needs; ... (Sec. 131 (a) (4) (C)

> The Commissioner and the Secretary of Labor together shall - ... evaluate the impact of such bilingual vocational training on the shortages of well-trained personnel, the unemployemnt or underemployment of persons with limited English-speaking ability, and the ability of such persons to acquire sufficient job skills and English language skills to contribute fully to the economy of the United States; ... Sec. 182 (a) (2))

> The Commissioner and the Secretary of Labor together shall - . . . develop and disseminate accurate information on the status of bilingual vocational training in all parts of the United States; . . . (Sec. 182 (a) (1))

Other Sources

Morrison's respondents ranked data collection and evaluation needs as a high priority. The mean rating of statements regarding the need to more effectively evaluate vocational education and to provide improved data for planning and evaluating vocational programs were fourth and eighth highest, respectively. Those surveyed viewed improving and expanding follow-up studies of former graduates and employers, and developing practical procedures for measuring cost-effectiveness of program alternatives as medium priority needs. (Morrison, 1976)

NAM found it was difficult for those secondary vocational education programs lacking a viable feedback and evaluation mechanism to respond effectively to job market projections for occupationally trained high school students. NAM recommended that systematic, standardized, and result-based methods of evaluating programs should be required. (NAM, 1975)

District level personnel in large cities perceived data collection and evaluation needs as a fairly low priority. Adjudged medium low needs were collecting information about vocational graduate on-the-job performance from present employers, and collecting up-to-date and valid information about job competencies in certain areas. A lower ranked need was that of developing systematic procedures for using the information collected through follow-up studies to improve the educational process. (Adams, 1977)

Almost every one of the ten state plans reviewed had as a goal the improvement of data collection and/or evaluation.

Some states identified specific needs, such as the need to 1) develop program standards, 2) improve evaluation of apprenticeship programs, 3) determine if equipment needs updating, 4) translate student needs assessments and labor market surveys into programs, 5) study the effects of releasing seniors early in the school day, and 6) evaluate instructional materials. (State Plans, 1977)

The GAO report concluded that the planning of vocational programs should be improved at the local, state, and national levels. Better data for policy formulation and planning should be collected and the data that are available should be used more effectively. The report recommended that the Secretary of HEW should:

- expand management evaluations of state and local vocational education programs supported by federal funds. (p. 35)
- expand efforts to enforce the requirements that all LEAs and SEAs, in planning vocational programs, identify the needs of public and private business, industry, labor, and students and that those identified needs be considered the primary basis for decision-making about providing those vocational services supported by the Vocational Education Act of 1963. (p. 35)
- increase efforts in the development of vocational information systems that will provide data for comparative analysis, and continuously review use of that data to improve vocational programs. (p. 35)
- develop with states an improved approach to planning which will better meet state needs as well as providing information necessary to adequately monitor and evaluate federal program expenditures. (p. 35)

The GAO also recommended that HEW improve technical assistance to states so as to help them to identify, develop, and apply data which will more effectively consider each criterion in the law. (p. 104) (Comptroller General of the United States, 1974)

NACVE contends that what is needed is not a national vocational education data collection effort, but a national computerized information system for all education. The report cites the development of state management information systems as a step in this direction. The SACVEs recognize that data are not available for assessing labor market needs or projections. There is a need for Labor Department data. (NACVE, 1975)

State councils complained that there was no common core of data that could be used among different agencies and that the data formats now being used are not translatable from one system to another. Although the existence of adequate data is sometimes a problem, the greatest difficulty lies in obtaining it in a useable form. (NACVE, SACVE, 1974)

COVERD found that insufficient data exist to allow for a comprehensive evaluation of vocational education R & D and recommended that the Commissioner of Education ensure that USOE develop a comprehensive plan for evaluation of vocational education R & D. The objectives of this plan should be determined by examining vocational education and its actual benefits. They recommended that evaluation criteria be developed and a sample of projects be extensively evaluated. Additional data should be collected through longitudinal studies of vocational students and their employers concerning measures of students; job satisfaction, continuation of education, job mobility and wages, employers' satisfaction, and savings in training costs. The Committee also recommended that HEW support a comprehensive and well-integrated information resource system linked to a dissemination network serving practitioners.

The Committee issued a call for the improved evaluation of vocational education programs. Larger and better designed samples, more appropriate experimental and questionnaire design, better measurement of background and criterion variables, and more suitable statistical techniques need to be utilized. Other measures of program success such as job satisfaction, job turnover rates, changes in student self-perceptions, etc., should be considered. In short, vocational education R & D has been underutilized due to an inadequate data base and the lack of appropriate information collection and retrieval mechanisms. (COVERD, 1976)

Jennings and Radcliffe stress the importance of having evidence to show that vocational education is doing a better job than regular classes in getting people better jobs. They identify the following evaluative criteria: placement in jobs or closely related areas for which an individual is prepared; whether or not the person was well prepared for the job and satisfied with the area for which prepared; and whether the vocational program is worthwhile from the employer's point of view. (Jennings and Radcliffe, 1977)

In reporting Congressmen's perceptions of vocational education, Halperin listed one commonly held feeling that "vocational education is delinquent in statistical collection and 'hard-nosed' program evaluation so that Congress and the taxpayer cannot know whether programs are effective or even in proper compliance with federal statutes." (Halperin, 1978, p. 12)

Equipment and Facilities

General - Up-to-date equipment and facilities should be provided.

Specific needs: (legislative authority - 1976 Amendments)

1. Facilities should be renovated and remodeled to provide vocational education designed to meet today's needs.

> It is the purpose of this part to provide emergency assistance...to local educational agencies in urban and rural areas which are unable to provide vocational education designed to meet today's manpower needs due to the age of their vocational education facilities or the obsolete nature of the equipment used for vocational training, in order to assist such agencies in the modernization of facilities and equipment and the conversion of academic facilities necessary to assure that such facilities will be able to offer vocational education programs which give reasonable promise of employment ... (Sec. 191)

Other Sources

Respondents to Adams' survey ranked "standards, procedures, and funds for replacing obsolete equipment" as a medium high need. A medium priority goal as perceived by city directors is to improve the planning and financing of equipment for vocational instruction so up-to-date equipment can be maintained. (Adams, 1977)

Only two of the 10 state plans reviewed addressed the question of equipment and facilities and these were general statements to the effect that up-to-date equipment and facilities should be provided. (State Plans, 1977)

Funding

General - Adequate Funding should be provided.
Specific Needs:

1. Funds should be used more effectively
2. Funding levels need to be known far enough in advance for effective planning
3. Methods should be established to insure compliance with existing regulations in the use of Federal funds

The 1976 Amendments contain a great deal of material on how vocational education funds are to be allocated for various other needs but do not specifically address funding as a need in itself.

Other Sources

A high priority need according to Morrison's respondents was financing vocational education programs by effectively using local, state, and federal sources. A medium priority need was continuing proven innovations when outside funds were no longer available. (Morrison, 1976)

NAM found that the relatively high cost of providing occupational training in such areas as trades and industry hinders the expansion of these vocational education programs because funds are usually allocated on a per pupil basis. This contributes to the inability of secondary vocational education to respond to job market projections for occupationally trained high school students. (NAM, 1975)

District level personnel felt the highest ranked needs for vocational education in large cities were related to funding. The top need was for firm commitments concerning timely vocational funding so local districts could plan and initiate programs on schedule. The second highest need was seen as district forward funding based on long-range plans so as to permit continuity of program planning and services. Another moderately high ranked need was for direct federal funding to major urban areas without their being denied state funding. Other needs included resource allocation formulas allowing for differences in the cost of delivering vocational education in urban and rural areas, and development of alternative bases for obtaining funds at the local level. (Adams, 1977)

Most of the ten state plans reviewed which mentioned funding did so in a general sense by citing a need for adequate funding. Some specific needs which were reported included funding for innovative programs and "seed money" for the implementation of newly developed and tested programs. A few plans called for using funds more effectively, especially at the postsecondary level. (State Plans, 1977)

The GAO report recommended that the Secretary of HEW should:

- analyze actual State practices in distribution of federal funds to determine consistency with the law's criteria. (p. 104)

- perform follow-up reviews to insure that States improve their distribution procedures so that Federal funds can be better targeted to meet needs defined in the law. (p. 104)

Generally, the GAO found little to insure that funds provided to states are actually targeted to areas of highest need or to areas maximizing program impact. It felt that states could improve their distribution practices by allocating on the basis of: 1) manpower needs and job opportunities, 2) differences in vocational education needs, 3) relative ability to provide resources, or 4) relative costs of single programs versus making funds generally available to all LEAs. (Comptroller General of the United States, 1974)

NACVE recognized that a problem exists regarding the targeting of funds in accordance with priorities stated in the law. It cited the wide discretion allowed state and local administrators in handling federal vocational education funds and the competing demands made upon those administrators as contributing factors to this problem. The Council stated that there is a need for greater OE evaluation of how federal funds are used and stronger federal guidance to insure that priorities are met. NACVE recommended that HEW undertake a research effort to answer the following questions:

1. How much has the cost of vocational education per student hour in different types of courses risen since 1964?

2. How does the cost rise in vocational education compare with the cost rise in other areas of education?

3. State by state, how have state appropriations for vocational education compared with federal appropriations?

4. What factors seem to account for the difference between those states that have continued to match annual federal increases and those states that have not?

5. State by state, how does the record of appropriations for vocational education compare with the record of appropriations for secondary education? For higher education?

6. What factors seem to account for the difference between states which have increased the vocational education appropriation at a greater rate than the general education appropriation and states in which the opposite is the case? (p. 4)

Generally, the report called for stricter federal guidelines for expenditures for certain subpopulations, such as the disadvantaged and handicapped, and additional research to evaluate the strengths and weaknesses of the current system in maximizing the impact of federal funds. (NACVE, 1975)

Most of the state councils stated that better regulations are needed to define those in need and how to reach them. Concurrently, increased funding for special populations was seen as a necessity if the intent of the law is to be met. The councils expressed concern over the timing of funding, requesting that funding information be known far enough in advance to allow for sufficient planning. Councils also urged continuation of a carry-over provision. (NACVE, SACVE, 1974)

COVERD recommended that fifty percent of all vocational R & D funds should be designated as Commissioner's funds and be used to solve national or multi-state problems. They also recommended that at least twenty percent of the vocational education R & D funds be used to generate new knowledge. Generally, a better mix of funding procedures was suggested, one which would separate funding for career education and vocational education

R & D and would insure the allocation of funds specifically to Research Coordinating Units. Additionally, the Committee recommended that the Commissioners of Education should fund studies reflecting the needs of users of R & D to determine the most effective dissemination methods and forms of information analysis for different situations and users. (COVERD, 1976)

Jennings and Radcliffe mention the Congressional feeling that any research funds must be used only for applied research. Congress intends that research efforts should offer reasonable probability of improving teaching techniques or generating curriculum materials within five years of their termination. Jennings and Radcliffe also offer the hope that more adequate notice of appropriation levels will be forthcoming. (Jennings and Radcliffe, 1977)

Halperin reported that the new Administration would like to relax rigid fiscal controls upon states reaching a specified level of performance. He also reiterated the necessity of broad categorical programs for advancing the welfare of various groups which are inadequately served at the state and local level, while at the same time proposing that excessive categorization can be reduced. A complaint voiced by Congressmen is that vocational education is dominated by rural, vocational agricultural interests and consistently shortchanges the cities. (Halperin, 1978)

Interaction With Employers

General - There should be more interaction and involvement of employers in vocational education (legislative authority - 1976 Amendments)

> Funds available to the States ... may be used for contacts, for the support of exemplary and innovative programs, including - ... programs and projects to facilitate the participation of employers and labor organizations in postsecondary vocational education. (Sec. 132 (a) (5) (B)

Specific needs: (legislative authority - 1976 Amendments)

1. Wider use of cooperative vocational education programs

> Funds available to the States under Section 120 may be used for establishing or expanding cooperative vocational education programs through local educational agencies with the participation of public and private employers. (Sec. 122)

2. Wider use of work study programs

> Funds available to the States under section 120 may be used for grants to local educational agencies for work-study programs ... (Sec. 121 (a))

3. Greater coordination and cooperation with labor unions to develop pre-apprentice and journeyman training programs

> Funds available to the States ... may be used for contracts, ... for the support of exemplary and innovative programs, including - ... programs and projects to facilitate the participation of employers and labor organizations in postsecondary vocational education. (Sec. 132 (a) (5) (B)

Other Sources

The two highest priority needs for vocational education, according to Morrison's respondents, related to interaction with employers and labor organizations. The number one priority need was to increase collaboration with key segments of the employment community (e.g. business, industry, organized labor, government). A medium priority need was that of expanding opportunities for all students to explore and practice job skills in both community and school settings. (Morrison, 1976)

NAM found that the limited business and industry involvement was a major contributor to the failure of vocational education to meet the occupational needs of the student and society. They recommended that cooperative programs should be expanded even when this requires modification of existing statutes. (NAM, 1975)

Maintaining vocational education programs as a source of employees for business and industry was considered as a medium need by district level personnel in large cities. Frequent and consistent communication with employers to provide information on the programs offered, services provided, and employees available through vocational education programs was seen as a lower need. (Adams, 1977)

Ellis reported vocational education has greatly improved its relationships with the employment community since the enactment of the 1968 Amendments. National and State Advisory Councils and advisory committees have contributed to this improvement. Ellis stated that there remains a need for expanded cooperative and work-study programs because enrollments are so limited. (Ellis, 1975)

Of the ten state plans reviewed, the few that mentioned interaction with employers and labor organizations dealt primarily with the need to make wider use of cooperative and workstudy programs. One state plan mentions better coordination with labor unions in developing pre-apprentice and apprentice programs, while another mentioned cooperative programs emphasizing career exploration. (State Plans, 1977)

The GAO report claimed that local vocational officials have only informal and infrequent contact with the business community and that labor resistance was an obstacle to establishing work stations for vocational training programs. A need for more work experience was also reported. Cooperative arrangements between schools and employers were encouraged. A recommendation was made to the Secretary of HEW that legislative provisions which inhibit the interaction of students with the adult world be reviewed and possibly revised. (Comptroller General of the United States, 1974)

NACVE reported that work experience is only one technique to be used in the training of students. They cautioned against ignoring potential pitfalls - state of the economy, tightness of labor market, saturation of an area or industry with students, inadequate supervision, exploitation, misunderstandings with labor unions, etc. The Council suggested that cooperative work experience must be carefully planned, supervised by a knowledgeable coordinator, and details must be successfully negotiated with employers and labor unions. (NACVE, 1975)

COVERD, in reviewing literature on instructional techniques, noted that there is limited evidence demonstrating the superiority of cooperative education programs over other methods of instruction. In citing an assessment of research in cooperative vocational education methods by Wallace, they reported there is a need for: (1) a theoretical framework to guide the research and application of research findings; (2) improved research technology for evaluation of such complex instruction; (3) attention to many student and teacher variables and their interactions in complex learning environments; and (4) greater attention to growth in students related to intellectual skills, social skills, attitudes toward education and the world of work, and self concept.

The Committee also examined studies which have been conducted regarding the effectiveness of job training in industry and concluded that very little is known about tasks which are taught most effectively on the job or in school. (COVERD, 1976)

Personnel Development

General - The qualifications of persons working or preparing to work in vocational education should be improved. (legislative authority - 1976 Amendments)

> Funds available to the States under Section 130 (a) may be used to support programs or projects designed to improve the qualifications of persons serving or preparing to serve in vocational education programs, including teachers, administrators, supervisors, and vocational guidance and counseling personnel, ... (Sec. 135 (a)

Specific needs: (legislative authority - 1976 Amendments)

1. More women and ethnic group members should be prepared to administer vocational education programs.

2. There should be more effective preparation for special areas of vocational education

> Funds available to the States under Section 130 (a) may be used to support programs or projects . . .
>
> (1) to train or retrain teachers, and supervisors and trainers of teachers, in vocational education in new and emerging occupations;
>
> (2) which provide in-service training for vocational education teachers and other staff members, to improve the quality of instruction, supervision, and administration of vocational education programs, and to overcome sex bias in vocational education programs;
>
> (3) which provide for exchange of vocational education teachers and other personnel with skilled workers or supervisors in business, industry, and agriculture ... and for development and operation of cooperative programs involving periods of teaching in schools providing vocational education and of experience in commercial, industrial, or other public employment related to the subject matter taught in such school;
>
> (4) to prepare journeymen in the skilled trades or occupations for teaching positions;
>
> (5) to train and to provide in-service training for teachers and supervisors and trainers of teachers in vocational education to improve the quality of instruction, supervision, and administration of vocational education for persons with limited English-speaking ability and to train or retrain counseling

> and guidance personnel to meet the special needs of persons with limited English-speaking ability; ... (Sec. 135 (a) (1-5)

Funds available to the States under Section 130 (a) may be used for contracts for the support of curriculum development projects, including -- ...

> support services designed to enable teachers to meet the needs of individuals enrolled in vocational education programs traditionally limited to members of the opposite sex, ... (Sec. 133 (a) (2))

Not less than 20 per centem of the funds available to the States under Section 130 (a) shall be used to support programs for vocational development guidance and counseling programs and services which ... shall include -- ...

> vocational guidance and counseling training designed to acquaint quidance counselors with (A) the changing work patterns of women, (B) ways of effectively overcoming occupational sex stereotyping, and (C) ways of assisting girls and women in selecting careers solely on their occupational needs and interests, and to develop improved career counseling materials which are free; ... (Sec. 134 (a) (4)

Other Sources

Three needs related to personnel development received high priority rating by Morrison's respondents: improving opportunities for the in-service training of vocational personnel to renew and expand their competencies; insuring that preservice preparation of vocational personnel meets present and emerging competency needs; and improving counselor education programs. Lower priority needs included: preparing an adequate supply of qualified vocational personnel for each leadership role; identifying and improving the special skills needed by vocational personnel to work with special groups; and providing specialized personnel to vocational programs. (Morrison, 1976)

Among the highest ranked ten specific needs for vocational education in large cities was developing effective preservice counselor education programs in vocational guidance. Other fairly high ranked needs were training vocational teachers and counselors in new approaches to vocational education and encouraging the involvement of teachers in industry-based exploration and in-service education. A medium need was that of developing the special awareness, instructional skills, and service skills needed to serve the handicapped, minorities and other special needs groups. (Adams, 1977)

Ellis reported that the Education Professions Development Act has made significant strides in preparing vocational education leaders of vocational education. Even though the absolute number of vocational education teachers has grown, Ellis noted that there are critical shortages in selected vocational fields, particularly agriculture and trade and industry. (Ellis, 1975)

All ten of the state plans mentioned the need for improving the qualifications of persons working or preparing to work in vocational education, most crucially in special needs areas. Needed personnel development projects included programs for (1) working with the handicapped, (2) training state staffs to recognize and overcome sex bias, (3) training in new and emerging occupations, (4) training consumer and homemaking personnel, (5) training administrators of apprentice training, (6) improving the qualifications of guidance and counseling personnel, (7) educating instructional, supervisory, coordinating and administrative staffs in work-experience programs, (8) inservice training in competency-based instruction for all vocational teachers, and (9) preparing personnel to effectively organize and operate student vocational organizations. (State Plans, 1977)

COVERD recommended that the Commissioner of Education and state directors of vocational education insure that researchers and administrators from minority populations be involved in R & D programs. It was also suggested that annual status reports be prepared on the percentage of R & D project directors who are members of various population subgroups. The Committee recommended that user training programs be conducted involving R & D personnel, administrators, and educators to improve the flow of information from the R & D resource system to the practice community. (COVERD, 1976)

Jennings and Radcliffe stated that Congress, in modifying the EPDA Program, was trying to attract people who have skills that need to be taught and to assist them in moving into the vocational education profession. The new program will also permit teachers certified in over-supplied fields to be retrained for positions in vocational education. This will help address the teacher supply imbalance that exists in some areas. (Jennings and Radcliffe, 1977)

Halperin reported that Congressmen are critical of vocational education for being run by "an encrusted, defensive, unprogressive educational establishment, unwilling to cooperate with society's other trainers for employment. Vocational education faculty don't keep up-to-date and think ... only about their own vocation." (p. 11) Halperin advocates research activities designed to dispel such views. (Halperin, 1978)

Planning

General - There should be more and improved planning to guide the development and administration of vocational education (legislative authority - 1976 Amendments)

> Any State desiring to receive Funds under this Act shall submit to the Commissioner, during Fiscal year 1977 and during each fifth fiscal year occurring thereafter, a State plan for vocational education for the five fiscal years succeeding each such fiscal year. (Sec. 107 (a) (1))
>
> Any State desiring to receive funds under this Act shall submit to the Commissioner an annual program plan and accountability report for each of the fiscal years included in the five-year State plan. (Sec. 108 (a) (1))
>
> Funds reserved to the Commissioner under Section 103 for programs under this part shall be used primarily for contracts, and in some cases for grants, for --- support of a national center for research in vocational education, --- and shall, either directly or through other public agencies --- develop and provide information to facilitate national planning and policy development in vocational education; --- (Sec. 171 (a) (2) (D))

Specific needs:

To avoid duplication of effort, vocational education planners should be aware of all training facilities and programs in their geographic areas.

Other Sources

Planning, per se, was not listed as a separate need, and planning related concerns were not viewed as being high needs for vocational education in large cities. The need for systematic procedures for using follow-up information to improve the educational process received a mean rank of 42 out of 50. (Adams, 1977)

Ellis' examination of annual and long-range plans for vocational education indicated an improvement in the states' abilities to engage in comprehensive planning, but noted that problems exist. Numerous pieces of federal and state legislation calling for comprehensive planning lead to overlap, duplication, and sometimes competition among various agencies to serve the same people. Ellis reported that while the Vocational Education Amendments of 1968 called for planning, there was neither a specific mandate nor specific appropriation for states to engage in comprehensive planning. (Ellis, 1975)

Half of the ten state plans mentioned planning concerns, generally citing the need for more and improved planning to guide the development and administration of vocational education. Specific needs included planning for special needs students and planning that reflects the utilization of labor market needs data, training resources available, and advisory councils.

The GAO report noted that the vocational education planning process could be improved. It found that state and local plans for vocational education were primarily compliance documents, neither providing direction to programs nor measuring their impact. The needs of potential students and communities were not being assessed in any systematic, ongoing manner. It also found that the limitations on advisory councils lessened their impact on improvement in the planning process and that organizational patterns within vocational education fragmented responsibility, resulting in independent and isolated planning. The report made a number of recommendations relative to planning:

1. The Secretary of HEW should help states develop an approach to planning which will better meet state needs as well as provide information necessary to more effectively monitor and evaluate federal program expenditures.

2. Efforts should be expanded to enforce the requirement that all LEAs and SEAs, in planning vocational programs, identify the needs of public and private business, industry, labor, and students and furthermore, that those needs be considered the primary basis for decision making about providing vocational services under the Vocational Education Act of 1963.

3. The roles of those organizations within HEW involved in occupational training should be clarified and some mechanism should be implemented by which these bodies can engage in coordinated, comprehensive planning.

4. States and LEAs should be encouraged to assess training resources and facilities in all geographic areas so federal funding can be viewed within the context of total available resources.

In its recommendation to Congress, the GAO asked Congress to consider requiring the Secretaries of HEW and DOL to coordinate the planning of those programs conducted under state plans for vocational education with the planning done for training programs under CETA and those under the State Postsecondary Commissions authorized by the educational amendments of 1972. This coordination would assure that education and manpower efforts were synchronized at all levels.

NACVE acknowledged the compliance nature of most state plans, but asserted that all states are concerned with seeking ways to improve their planning process. The Council cited two efforts where state councils have recommended to the state board of education that the vocational education delivery system establish statewide priorities, goals, and objectives based on input received from a task force representing (1) all levels of vocational education, (2) public and private agencies serving vocational education, (3) lay persons, and (4) students; the state councils also recommended that the system provide for continuous review, updating, and evaluation. While it appeared to the Council that some progress was being made in assessing needs, setting priorities, and planning resource use, the Council recommended that a thorough needs assessment be required in each state before expenditure priorities are set so that the needs of the less vocal or less powerful elements of the population are not ignored. (NACVE, 1975)

The joint NACVE-SACVE report recognized current limitations of state plans, especially their compliance nature, and stated that the documents need to become more effective guides for performance. Unfortunately, the councils concluded that a "system has not been developed which will bring about the most effective planning at the state level." Suggestions for improving state plans included increasing the flexibility of the regulations defining how the state plans are to be created, and eliminating unnecessary formal requirements. (NACVE, SACVE, 1975)

Halperin reported that one of the recent congressional criticisms of vocational education has been that vocational education refuses to engage in effective statewide planning so that a state's needs and resources might be better matched. (Halperin, 1978)

Research and Development

General - R & D should be supported to encourage the improvement and responsiveness of vocational education. (legislative authority - 1976 Amendments)

> Funds available to the States under Section 130 (a) may be used for support of State research coordination units and for contracts by those units pursuant to comprehensive plans for program improvement involving - (1) applied research and development in vocational education; (Sec. 131 (a) (1)) one other reference

> Grants and contracts under Section 188 may be used, in accordance with applications approved under Section 189B for - ... (3) experimental, developmental, and pilot programs and projects designed to test the effects of research findings; (Sec. 189 (3))

Specific needs: (legislative authority - 1976 Amendments)
1) Dissemination and utilization - there should be greater knolwedge about and use of research results.

> Funds available to the states under Section 130 (a) may be used for support of state research coordination units and for contracts by those units pursuant to comprehensive plans of program improvement involving - ... (5) dissemination of the results of the contracts made pursuant to paragraphs (1) through (4), including employment of persons to act as disseminators, on a local level, of these results. (Sec. 131 (a) (5))

> Grants and contracts under Section 188 may be used, in accordance with applications approved under Section 189B, for ... (4) other demonstration and dissemination projects. (Sec. 189 (4))

Other Sources

Morrison's respondents felt it a high priority need to provide tools and techniques for improved planning, management, and evaluation of vocational education programs. Low priority needs included improving the effectiveness with which program directors adopt valid innovations and develop effective organizational patterns. (Morrison, 1976)

District level vocational educational personnel in large cities perceived, as a medium high need, the development of procedures for incorporating demonstrated innovations into the operating school district when outside funds are no longer available. Identifying methods for diagnosing the basic academic competencies of students so that appropriate remedial activities can be prescribed was considered to be a medium low need. (Adams, 1977)

Ellis reported that Congressional appropriations for vocational education R & D have consistently fallen short of the authorized level. This underfunding has led to several serious needs in vocational education, among them the need for (1) more definitive data to determine the impact of vocational education on the national program, (2) basic as well as applied research, (3) more coordination among projects of national need so as to avoid duplication, (4) ongoing addressing of national and state priorities, and (5) increased emphasis on the utilization and dissemination of research findings. (Ellis, 1975)

Most of the ten state plans supported R & D so as to encourage the improvement and responsiveness of vocational education. Some of the specific R & D activities which were called for included: developing a system for surveying employers of persons who recently completed vocational programs, developing a regional system for identifying and serving the vocational needs of adults, and implementing programs to test the effectiveness of research findings. (State Plans, 1977)

COVERD recommended that a significant portion of Federal R & D funds should be designated for dissemination and utilization, under the direct responsiblity of the Bureau of Occupational and Adult Education of USOE. It asked that comprehensive dissemination and utilization plans be developed and user training programs be conducted to improve the flow of information from the resource system to practitioners. The Committee recommended several strategies necessary for a comprehensive evaluation of vocational education R & D: (1) defining the goals of the R & D program, (2) having funding agencies provide access to final reports of all R & D projects, (3) facilitating the development of research synthesis documents, (4) developing an evaluation plan for R & D that includes the collection of longitudinal data, and (5) developing a comparative, evaluative data base to determine what vocational education programs and R & D have been effective and should receive continued support. (COVERD, 1976)

The National and State Councils asked how research and exemplary programs can be designed so as to have maximum impact on the vocational education system? In a survey of impact directed to State Councils, a question relative to R & D was, "Is there an adequate system for the dissemination of the results of research and exemplary programs in your State?" Of the 36 states responding, nineteen answered "yes" and seventeen "no". (NACVE, SACVE, 1974, Appendix 11, p.13)

Jennings and Radcliffe reported Congress' intent to see results from Vocational Education R & D. By forcing states to contract for research, curriculum development, or exemplary program, rather than make grants for these activities, Congress hopes to see more concrete results. Congress feels that vocational education research should have a direct impact on classroom teaching techniques or curriculum materials. (Jennings and Radcliffe, 1977)

Sex Discrimination and Sex Stereotyping/Equal Opportunity

General - All artificial barriers to participation in vocational programs should be eliminated. (legislative authority - 1976 Amendments)

> It is the purpose of this part to assist states in improving planning in the use of all resources available to them for vocational education ... It is also the purpose of this part to authorize Federal grants to States to assist them ... (3) to develop and carry out such programs of vocational education within each state so as to overcome sex discrimination and sex stereotyping in vocational programs (including programs of homemaking) and thereby furnish equal educational opportunities in vocational education to persons of both sexes ...." (Sec. 101 (3))
>
> Funds available to the states under Section 130 (a) may be used to support activities which show promise of overcoming sex stereotyping and bias in vocational education. (Sec. 136)

Specific needs:

1. Sex discrimination and sex stereotyping should be overcome in vocational education programs.

2. No one should be prevented from taking vocational courses on the basis of race, ethnicity, or cultural origins.

Other Sources

Those responding to the National Survey of Vocational Education Needs gave a low priority ranking to the need to enroll students into all vocation programs on an equal opportunity basis. Based upon a means ranking, the statement was ranked number 47 out of 48. (Morrison, 1976)

Nine out of the ten state plans reviewed listed the elimination of sex stereotyping and sex discrimination as a goal or objective, although several states reported that during the public hearings, several citizens said that too much emphasis was being placed on sex discrimination.

The GAO report determined that sex discrimination was among the barriers which have restricted access to training and employment. Although prohibited by Title IX of the Education Amendments of 1972, sex discrimination was found to be implicit in catalogs describing vocational programs and in the location of classes in such a manner as to encourage sex role stereotyping. GAO recommended to the Secretary of HEW that applicable provisions of Title IX of the Education Amendments of 1972 be implemented to eliminate sex discrimination in vocational education, and that proven techniques be adopted to recruit members of one sex into occupations traditionally considered the prerogative of the other sex. They also recommended that entrance requirements to institutions and courses be analyzed and that states be advised that federal funds will not be available for programs which unfairly deny entrance to students who want training.

The National and State Advisory Councils argued that in order for vocational education to continue to grow and meet the needs of people, it will have to determine whether discrimination based on race or sex exists. (NACVE, SACVE, 1974)

The COVERD reported that although vocational education has been encouraged to eliminate sex stereotyping in programs and to provide equal access to programs associated with occupations traditionally dominated by one sex, it is not clear to what extent this requirement is being met. The Committee noted a dearth of vocational education R & D funding devoted to the needs of women, especially since more than half of the students in vocational education are women. (COVERD), 1976)

Radcliffe asserted that vocational education has a tremendous responsibility in overcoming sex discrimination and providing for productive employment. (Jennings and Radcliffe, 1977)

Halperin noted the following Congressional criticism of vocational education: "vocational education (and home economics in particular) is discriminatory toward women, minorities and the handicapped and much of vocational education is sex-stereotyped." (Halperin, 1978, p. 11)

Special Needs Groups

General - Appropriate vocational education programs should be provided for individuals who require special programs, modifications of programs, or supplemental services to help them succeed.

Specific groups: (legislative authority - 1976 Amendments)

1. Handicapped - Mental, hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, crippled, or other health impaired.

   For each fiscal year, at least 10 per centum of each State's allotment under Section 103 shall be used to pay 50 per centum of the cost of vocational education for handicapped persons. (Sec. 110 (a)

2. Disadvantaged - Persons with academic or economic problems

   Any State desiring to receive the amount for which it is eligible for any fiscal year pursuant to this Act shall, through its State board, submit to, and maintain on file with, the Commissioner a general application providing assurances - ... that the State shall, in considering the approval of such applications, give priority to those applicants which - are located in economically depressed areas and areas with high rates of unemployment, and are unable to provide the resources necessary to meet the vocational education needs of those areas without Federal assistance, ... (Sec. 106 (a) (5) (A) (i))

   From the sums made available for grants under this subpart pursuant to sections 102 and 103, the Commissioner is authorized to make grants to States

to assist them in conducting special programs for the disadvantaged ... (Sec. 140)
ences

3. Bilingual - Persons with limited English speaking ability

   Funds available to the States under section 130 (a) may be used for contracts, as part of the comprehensive plans of program improvement mentioned in section 131 (a) for the support of exemplary and innovative programs, including - ... programs of effective vocational education for individuals with limited English-speaking ability; (Sec. 132 (a) (3))

4. Inmates of correctional institutions

5. Women

   Grants to States under this subpart may be used, in accordance with five-year State plans and annual program plans approved pursuant to section 109, for the following purposes: ... support services for women who enter programs designed to prepare individuals for employment in jobs which have been traditionally limited to men, including counseling as to the nature of such programs and the difficulties which may be encountered by women in such programs, and job development and job follow-up services; (Sec. 120 (b) (1) (J))

6. Other

   Grants to States under this subpart may be used, ... for the following purposes: ... day care services for children of students in secondary and post-secondary vocational education programs; (Sec. 120 (s) (10) (K))

   Grants to States under this subpart may be used ... for the following purposes: ... vocational education for - (i) persons who had solely been homemakers but who now, because of dissolution of marriage, must seek employment; (ii) persons who are single heads of households and who lack adequate job skills; (iii) persons who are currently homemakers and parttime workers but who wish to secure a fulltime job; (Sec. 120 (b) (1) (L) (i-iii))

Other Sources

Generally, Morrison's respondents ranked special needs groups as low priority. Two exceptions were improving and expanding vocational education to meet the needs of the handicapped, which was ranked as a high priority need, and improving and expanding vocational education to meet the needs of the disadvantaged which was a medium priority need. (Morrison, 1976)

NAM reported that the national dropout rate in secondary vocational education programs was considerably higher than that for nonvocational education programs, primarily because many vocational education students are from socially, economically, and intellectually disadvantaged backgrounds and thus have special needs. Very few programs are designed specifically for this group and only a small percentage of those programs have been shown to be successful in reducing the number of dropouts and meeting the special needs of the disadvantaged. (NAM, 1975)

A medium need for vocational education in large cities as perceived by district level personnel was developing the special awareness, instructional skills, and service skills required to serve the handicapped and other special needs groups. Vocational education programs for early school leavers and unemployed youth, and remedial basic skill programs for students with weak academic skills were viewed as low need areas. (Adams, 1977)

Vocational education enrollments by the socio-economically disadvantaged and by the handicapped showed an increase (in terms of absolute numbers) during the period 1971-1974. Ellis reported, however, that educational services to special needs persons have not grown to the extent anticipated, both because disadvantaged or handicapped vocational education students do not qualify for concurrent financial assistance or stipends and the definitions for "socio-economically disadvantaged" and "handicapped" need clarification. Once those definitions are clarified, those who may best benefit from vocational education programs and services can be identified and recruited. Ellis added that the problems associated with providing vocational education services to persons with special needs are even more severe in the core cities. She stated that hard data portraying the extent to which vocational education programs are having an impact on alleviating the problems of students in core city schools would be useful. (Ellis, 1975)

All ten state plans made extensive reference to special needs groups including: homemakers seeking employment; enrollees in non-traditional programs; adult handicapped persons; the disadvantaged; the handicapped; persons with limited English-speaking ability; dropouts and potential dropouts; youthful offenders;

gifted and talented individuals; and students who are parents. Some of the perceived needs expressed in the plans included improving and/or specializing curriculum, offering more adult and postsecondary programs for handicapped individuals, providing support services for women, establishing day care services for the children of parents who would otherwise not attend, and providing programs for youthful offenders and those of limited English-speaking ability. (State Plans, 1977)

The GAO report indicated that persons with special needs have not been given as high a priority as was intended under the 1968 Amendments, a conclusion based upon an analysis of expenditures for the disadvantaged and handicapped in relation to each state's total expenditures for each fiscal year from 1970 through 1973. In addition, GAO found that relatively few handicapped individuals were participating in vocational education programs. State councils, too, have expressed concern about the small percentage of disadvantaged and handicapped students being served relative to the number needing vocational education. GAO recommendations to the Congress regarding programs and services for the disadvantaged and handicapped took the form of two options:

> a) Requiring states to match Federal set-asides for disadvantaged and handicapped at the same level they are required to match regular part B funds (50-50), thereby insuring state and local involvement in and commitment to these efforts.
>
> or
>
> b) Increasing the percentage of the set-asides for the special need categories. (p. 21) (Comptroller General of the United States, 1974)

The Council acknowledged that disadvantaged and handicapped students are not being adequately served by vocational education programs. It points out the tension between federal priorities and local concerns which exists in this program area. With an absence of federal pressure to direct funds toward students with special needs, funds will probably be diverted into programs with more backing from locally powerful groups. The failure to require a thorough needs assessment for the development of state plans was also seen as contributing to the problems of the disadvantaged and handicapped. (NACVE, 1975)

Most of the state councils favored maintaining set-asides for the handicapped and disadvantaged, but felt that present funding levels were inadequate. Generally, the councils felt they would need increased funding in order to meet the needs of special groups. They also called for standardization in the definitions of disadvantaged and handicapped in various federal laws, and better regulations for defining those in need and how best to reach them. (NACVE, SACVE, 1974)

The Committee raised the question of how vocational education can best serve socially and economically disadvantaged students. A review of R & D revealed that efforts concerned with the disadvantaged have lacked breadth and quality. Topics needing more attention include public school vocational education programs, national surveys, teacher preparation, student follow-up studies, and structured evaluation. Whether or not vocational education can be expected to overcome barriers such as language or acculturation difficulties which confront ethnic minorities is another R & D area which demands attention. (COVERD, 1976)

Transition from School to Work

General - Methods should be developed to help prepare students for job entry.

Specific needs: (legislative authority - 1976 Amendments)

1. There should be in-school preparation for transition: job seeking skills, presenting one's self in job interviews, etc.

2. Students should be prepared for occupational adaptability and flexibility.

3. Job placement (and follow-through) services should be provided.

> Not less than 20 percentum of the funds available to the States under Section 130 (a) shall be used to support programs for vocational development guidance and counseling programs and services which, subject to the provisions of subsection (b), shall include - ... (3) provision of educational and job placement services, including programs to prepare individuals for professional occupations or occupations requiring a baccalaureate or higher degree, including follow-up services; (Sec. 134 (a) (3))

Other Sources

Respondents to the National Survey of Vocational Education Needs rated "providing comprehensive vocational guidance, counseling, placement, and follow-up services to all who need them" as a high priority need. Based upon the mean group ratings, this need was assigned a priority rank of six out of a total of forty-eight ranked needs. Needs which were ranked in the medium priority category included: developing alternative methods for assisting students in transition from school to work (e.g., job seeking skills, coping with work entry and adjustment, work habits, attitudes); and placing vocational students in occupations related to their education through coordinated efforts at all levels (classroom, school, district, state, federal). (Morrison, 1976)

Creating opportunities for students to develop problem-solving skills for coping with work entry and job adjustment problems, and pre-employment job readiness programs to help students learn job seeking skills such as job hunting, job interviews, completing job applications, etc., were perceived as medium low needs by district level vocational education personnel in large cities. (Adams, 1977)

Congress envisioned that the 1968 Amendments would help alleviate unemployment and poverty by increasing the proportion of participants who complete vocational education programs and who find appropriate employment. Ellis reported that the growing success of vocational education programs and supportive services has been reflected in the numbers of completions and placements. She posed some fundamental questions, however, which remain unanswered. What is happening to students who did not complete their programs? Have the students who found jobs remained in those jobs and if so, have they found satisfaction in their employment? Ellis contended that a national follow-up system is needed to gauge the effectiveness with which vocational education is preparing youth and adults for the labor market. Ellis also viewed the development of the cluster concept in curriculum design as holding promise for vocational education, although limited funding has hampered progress. Ellis stated that workers would be able to transfer more readily from one job to another within a family of occupations if students were able to acquire a salable skill in one area while becoming knowledgeable about a host of related occupations. (Ellis, 1975)

Of the ten state plans which were reviewed, only three specifically mentioned the need for methods to be developed to help prepare students for job entry. Those three plans addressed the need for job placement and follow-up services. (State Plans, 1977)

The GAO report stated that schools have not routinely provided job placement assistance, both because many teachers view their sole function to be that of education and training, and because neither schools nor teachers have generally been held accountable for placing students in jobs when they complete that training.

The report also cited the lack of student and employer follow-up, which precludes evaluating state and local vocational programs in light of manpower needs and job opportunities. GAO recommended that Congress require that schools take responsibility for job placement assistance and follow-up in federally supported vocational education programs. (Comptroller General of the United States, 1974)

Many state councils reported that it was difficult to respond to the question, "Do vocational education students in your state find jobs in the area of their training?" because of a lack of followup data. Some states questioned evaluating the success of a secondary vocational education program solely on the basis of placement in the area of training. They contend that many employers value the training vocational education students receive in work attitudes and general work-related skills more highly than specific job skills. All councils agreed, however, that follow-up services and record keeping were desirable, and the use of funds for these purposes should be authorized. (NACVE, SACVE, 1974)

COVERD recognized that there have been many attempts to maximize the proportion of vocational education graduates placed in jobs. Two strategies which have been used are labor market forecasting and career guidance. The Committee suggested that labor market forecasting methods can be improved in three ways: by attempting to take into account the extent to which wages and working conditions will change if more or fewer workers are trained; by recognizing that labor market information from various vocational education districts must be coordinated in some way because workers move from place to place; and by considering macro-economic or institutionally oriented employment policies when making labor market forecasts. In reviewing R & D relative to occupational adaptability, the Committee noted that because of the problems faced by researchers attempting to study common requirements in existing jobs or to provide preparation for a variety of job opportunities, there remains a need to identify similar skills across groups of occupations and to determine the skills required for advancement within occupations. (COVERD, 1976)

CHAPTER 3

BACKGROUND PAPERS FOR SELECTED NEED AREAS

This chapter presents the background papers prepared by consultants knowledgeable in the five need areas selected for special emphasis. These papers are not specific research proposals; they are instead questions and ideas from well informed individuals concerning what is necessary to advance the state of knowledge in their particular content areas. The authors were specifically asked to prepare "think pieces", not literature reviews or synthesis and analysis papers. To facilitate originality, they were given complete discretion on how to organize and present their ideas. In addition, the consultants varied in the amount of time they were able to devote to their tasks. The result is a group of papers that vary widely in format, approaches, issues, and depth. Because of this variety, the reading may be somewhat difficult, but most of the papers succeed in raising questions worthy of attention.

The need areas vary widely; there are therefore few themes common to the papers. One of the few recurrent themes, however, is that more attention should be paid to the basic concepts that underlie the field. Often the research agenda set for vocational education, both in the priorities of the USOE and state RCUs, has been addressed to immediate, practical problems. The nature of these problems and the time frame in which they have had to be addressed - and reports be produced - have precluded careful attention to conceptualization or even to adequate instrument development. Vocational researchers have often had to try to solve immediate problems without being sure that the problem was correctly stated or their tools adequate to the task.

Knaak's paper is a good example of the kinds of problems encountered when problem-solving is not accompanied by more fundamental research. Knaak examines the costs and effectiveness of competency-based vocational education and raises questions which often have not been addressed in the efforts to develop and implement competency-based curriculum.

Kruger's paper on coordination and articulation gives another example of the need to examine basic premises before trying to determine how something can be done better. There is currently a major federal initiative to improve coordination between vocational education and CETA. Kruger raises some general questions about coordination that are directly applicable to this area.

For example: what is the definition of coordination, what are its objectives, and why are these important? What will vocational education and other agencies gain and lose from coordination? Who will be responsible for coordination and what does each party give and receive in return? These are the kinds of basic questions which are essential to fully understanding problems but which, unfortunately, are often overlooked or given short shrift when the focus is primarily on solving a particular problem. In the following section the main points of each of the individual papers are summarized and the original papers are then presented by need areas.

Coordination

Howard Johnson's and Daniel Kruger's papers explore in considerable depth the internal and external ramifications of articulation and coordination. Johnson concentrates on internal aspects, particularly on vertical articulation across sequential competency levels. The goal of articulation, for Johnson, is to assure continuous progress for students. To help assure such progress, Johnson identifies three broad categories of concerns to which articulation R & D could be directed: (1) understanding the current status of articulation in vocational programs, (2) identifying the types of conditions which foster or impede articulation, and (3) determining potential intervention strategies or models to improve vertical articulation. Kruger's paper looks primarily at the external aspects of articulation and coordination across governmental levels and with other publicly supported employment and training programs. Taking as his focus one vocational education course in one Michigan school system, Kruger identifies seven levels of intergovernmental relationships and at least twenty individual relationships within these seven sets which can, at least theoretically, impact on this one course. He also identifies another sixteen broad external forces, including over forty-five subsets of relationships which impact on and shape vocational education. He then outlines a series of questions concerning just what coordination and articulation involve, what the barriers are to coordination, and how coordination can be improved.

Curriculum

Calvin Taylor prepared one of the longest and most discursive background papers. When asked how long it had taken him to prepare it, Taylor replied, "All my professional life." The paper is an attempt to present many of the ideas about transferability of skills that have been of major concern to Taylor. Three basic questions occur in several different contexts: (1) what are the skills (or talents) people use most frequently in life, (2) what are the retention curves for different types of skills and knowledge, and (3) how can training be targeted to the skills that will be needed in actual performance?

William Knaak, asked to write about competency-based vocational education, raises 25 specific questions and research topics. These range from efforts to obtain consensus concerning just what characteristics constitute competency-based instruction to questions concerning its effectiveness as an instructional method and how it can best be implemented. Knaak lists nine management and nine educational reasons why a personalized competency-based program was initiated at the vocational-technical institute which he directs. He calls for research to determine if these reasons are valid, and if they are, what is necessary to implement competency-based programs on a wider scale.

Data Collection and Evaluation

In his paper Joseph Malinski does not raise research questions so much as outline a model for a data system for vocational education. It is a model designed for both operational analysis and research in vocational education in contrast to data collection for research on or reporting about vocational education. The system he describes integrates data subsystems (about students, curriculum personnel, etc.) across levels (national, state, local, individual person) and educational context (policy, goals, outcomes, etc.). Although Malinski poses relatively few direct questions, a huge effort would be required to implement the system he describes on a national scale. Would the benefits in terms of program management and effectiveness warrant this effort? What type of investment would be necessary both in equipment and in the development of personnel? Is the projected investment feasible in light of future resources likely to be available to vocational education? These and similar questions arise from a consideration of the system Malinski describes.

Jeffrey Windom looks at another aspect of data needs for vocational education, specifically, the need to have information on the supply of skilled workers. He identifies eight areas in which better information would permit more accurate estimates of the need for new workers. Four of these areas deal with the dynamics of the labor market and four with the characteristics of job training programs and the fit between these programs and labor market needs. Windom suggests a research approach for each of the research question he raises.

The Skinkle-Greenwood and Klit papers both address the question of how evaluation in vocational education can be improved. Skinkle and Greenwood discuss some reasons that may have prevented the development of evaluation systems, some weaknesses in traditional methodologies, and some approaches that could be used to expand evaluation capabilities. For each of the problems they identify, a project is described that could either examine the problem in detail or test ways to overcome it.

John Klit, a state administrator, primarily addresses the practical needs of program directors and decision makers. He demonstrates the need for exploring alternative evaluation schemes and methods, determining the cost-effectiveness of different approaches and utilizing information from different methods and sources into a consolidated model. Klit then suggests R & D activities directed to providing tools, how-to-do-it handbooks, that can be of immediate use to practicing vocational educators. These handbooks would cover how to conduct, report, and use evaluation studies, especially studies involving nonquantitative methods and lay citizens. Klit also asks if the legislative mandate to test student achievement in vocational education can be carried out.

Planning

Allison Jackson, who was a local level planner and is now working at the state level, chose to present her research suggestions in tabular format. She lists eight questions or problem areas in local level planning and proposes a specific approach for each one, including instrumentation, sample population, and study procedures, and a need/rationale statement. The major concerns reflected in the research questions Jackson raises relate to improving coordination and communication in the planning process, for example, how to foster coordination of local advisory councils with state and regional bodies.

Transition from School to Work

Harry Silberman addresses the transition from school to work intrinsically and extrinsically and his paper yields two quite separate research agendas. The extrinsic perspective involves studies of job market demands and analysis of labor market structure and dynamics, and leads to questions about ways to help people get and keep jobs. The intrinsic approach leads to questions on how to improve the quality of educational experiences. In this area Silberman suggests the focus should be on the development of four types of instruments, measures of (1) the degree to which different educational experiences have actually been implemented, (2) the personal development of students, (3) individual attributes that moderate the effects of different treatments, and (4) the organizational and ecological characteristics of the environment. When such measures are available, Silberman feels, it would be possible to determine if educational experiences produce the effects claimed for them.

Richard Graham was also asked to address the transition questions, and he approaches it primarily from a policy perspective. He first confronts the problem of increasing equity in transition by asking how the transition curve for minority youth can be made more congruent with the curve for white, middle class youth. He then turns to more general problems concerning the nature of a transition process path-model and how programs can be implemented to impact on this model. His discussion goes well beyond the traditional problems of vocational education but are fundamental to many of them.

__Need Area__: Coordination and Articulation

Howard M. Johnson Professor of Education University of Washington Seattle, Washington	Research and Development on Articulation of Vocational Programs Across Secondary, Postsecondary and Adult Levels
Daniel H. Kruger Professor of Industrial Relations Michigan State University E. Lansing, Michigan	Reflections on Vocational Education in Terms of Research Possibilities

RESEARCH AND DEVELOPMENT ON ARTICULATION OF VOCATIONAL PROGRAMS ACROSS SECONDARY, POSTSECONDARY, AND ADULT LEVELS

Howard M. Johnson

Before discussing research and development needs in the area of articulation, it is desirable to present a definition of the articulation process itself. One such definition suggested at a 1975 conference of vocational educators in Washington State follows:

> Articulation refers to the relationships between educational programs which are designed to provide a smooth transition for the student from one educational program to another. This movement of the student between programs can be either horizontal or vertical. Horizontal articulation includes those relationships between programs, courses, or activities which exist at any one educational competency level and provide a coordinated educational program for the student. Vertical articulation refers to those relationships which exist between institutional programs, courses, or activities and provide a coordinated program for the student moving from one educational competency to the next.*

Certain component parts of this definition are worthy of discussion as we attempt to define priority research and development needs in the area of articulation. First, the definition focuses attention on the need for a continuous educational experience for students. The important aspect of articulation as defined here is not the elimination of duplicated services, cutting costs, or the adoption of specific forms of governance over vocational programs, but it is rather the assurance of continuous progress for students. This concern for students should therefore guide efforts to establish research priorities in the area. Second, we observe that the definition includes a concern for both horizontal (within a single competency level) and vertical (along sequential competency levels) articulation. While this paper focuses on the vertical dimension of articulation across secondary, postsecondary, and adult levels, it is important to remember that both concerns are always present and cannot be totally separated. The impossibility of separating these two strands stems partly from the problem of making a clear separation between the academic and vocational components of education. None of us is able to totally make this separation and we must therefore admit that even the most academic parts of our education have at least some impact on our occupational lives; hence coordination between the academic and vocational experiences at any point in our training (horizontal articulation) is of crucial concern in preparation for vocations. A third focus worth discussion now is the inclusion of competency level sequencing, along which vertical articulation is to be established. The assumption here is that articulation implies an ability to define competencies along some continuum. If such sequencing of competencies cannot be accomplished, we can assume that articulation is probably not a major concern to the educator. This may be the reason that vertical articulation in mathematics programs is generally of greater concern to students and parents than is vertical articulation in such areas as social studies or the arts. Mathematics is by its very nature a more tightly sequenced set of experiences or competencies and the concern for articulation is therefore much more important. Sequencing of competencies is readily accomplished in most vocational areas and to the extent that such sequences are essential to learning about vocation, we conclude that articulation itself becomes a much more important concern to those involved in planning and delivering training programs.

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*Heuchert, Arnie H., and Beverly Postlewaite, Articulation of Vocational Education. A report on the Sun Mountain Conference published by the Research Coordinating Unit, State of Washington, Olympia, Washington 98504, May 1975.

Having reviewed one suggested definition of articulation and committed ourselves to a primary concern with vertical articulation, it remains for us to identify some basis for examining research and development priorities. After reviewing a number of studies, including the 1976 study of articulation conducted by the National Advisory Council on Vocational Education, it seems that most research and development concerns can be viewed within the context of three broad categories:

1. Understanding the current status of articulation in vocational programs.
2. Identifying the types of conditions which seem to foster good articulation and those which seem to impede articulation.
3. Determining potential intervention strategies or models which might be used to improve vertical articulation of vocational programs.

The first category centers on an attempt to increase our diagnostic capability in articulation. Diagnostic, as used here, refers to the capability of describing more precisely the extent to which students experience articulation problems and the nature of these problems. In the second area, we are concerned with predicting the presence or absence of good articulation based on a host of variables. Important questions raised in this second area are the following:

What state and local governmental arrangements are associated with good vertical articulation of programs, and are there arrangements which seem to work against the development of articulated programs?

What characteristics of administrative and instructional personnel are likely to be associated with good articulation practices?

Are certain scheduling and instructional strategies (e.g., quarter courses, learning modules, employer-based learning) more likely to be associated with good program articulation?

The third broad category of concerns focuses on the merits of a number of proposed articulation strategies or models. In this area, we are not only concerned with the relative value of these several strategies but with a detailed description of the procedures and costs associated with each strategy.

Included here are wide ranging lists of articulation strategies such as shared advisory committees, joint development of career ladders or competencies upon which to build programs, joint program planning, exchange teachers, shared facilities, and joint inservice training experiences. This particular category of research and development needs might be viewed as the search for solutions to articulation problems which exist in all vocational program areas and institutions. For this reason, it is clearly dependent upon the diagnostic and prescriptive information generated from research in the first two categories.

In the remainder of this paper, we discuss key questions which should be examined within the three broad categories already described. These questions were generated in a meeting involving three vocational educators from the Seattle area. Their names and positions are as follows:

Roger Wing, Director of Vocational Education
Bellevue Public Schools
Bellevue, Washington

Gary Clyde, Program Director
Lake Washington Vocational Technical Institute
Kirkland, Washington

Mary Phillips, Director of Vocational Programs
Edmonds Community College
Lynnwood, Washington

These three have been invloved in a series of articulation activities partially supported by the Washington State Commission for Vocational Education and under the sponsorship of the Northeast Vocational Advisory Council (NEVAC). This NEVAC group consists of nine suburban school districts, two vocational technical institutes, and three community colleges to the north and east of Lake Washington.

While the descriptive material following basically represents the ideas of the author, it is important for the reader to understand the process which led to the priority listing of research concerns. Utilizing the three categories of research and development concerns, these three vocational educators generated a number of possible research and development questions and then prioritized these concerns, discussing possible approaches to the research. Dr. Johnson refined the questions and added certain details to suggest research approaches. In the final two sections of this report are examined the list of R & D priorities and a set of R & D approaches for those five areas judged to be potentially most beneficial to vocational education.

List of Priority Research and Development Questions

As mentioned above, a team of vocational educators assisted in prioritizing a list of key research and development questions and concerns falling into three broad categories. This listing, complete with a very brief description of possible directions for research, is provided here. A more detailed description of research approach or direction is provided in the last section of this paper, but this level of detail is reserved for the few questions judged to be of highest priority, a group identified with an asterisk in the list which follows:

Category #1: Understanding the current status of articulation in vocational programs.

1.1 To what extent do articulation problems exist at present in the various vocational program areas and what is the nature of these articulation problems or barriers?

Everyone seems to be talking about poor vertical articulation of vocational programs but there has been limited documentation of the level of articulation problems experienced by students in the several vocational areas of agriculture, business and office, electronics, power mechanics, etc.

It might be useful to interview a number of students (and parents) involved in these vocational programs to discover the degree of problems actually experienced.

This type of research may assist in pinpointing the nature of articulation problems as actually experienced by students and might indicate the specific vocational program areas in which articulation most needs improvement.

1.2 To what degree is the public ready to pay for the cost of improved articulation of vocational programs?

There are definite costs associated with better articulation of vocational programs, particularly if teacher and administrator communications is viewed as central to improving the articulation processes. Board members of the various schools offering vocational programs must be willing to pay for this communication time if it is to become a reality. Hence, there is need to do some opinion research among board members and the general public to determine the level of financial support likely to be directed in the articulation area.

This type of research is extremely difficult and would probably entail the respondent making an actual allocation of fixed amount of dollars over a number of possible education needs. Unless articulation comes out receiving a substantial resource allocation in the process, it might be concluded that articulation is not viewed as a high priority need by the public generally and we are not likely to succeed in directing additional resources toward this end, no matter how much we as educators may feel the need.

1.3 What instruments or procedures might be used at the local school level to determine major barriers to articulation?

The vocational director often hears of isolated cases of poor articulation in a given program area but it is sometimes difficult to determine the numbers of students adversely affected. What is being called for here is the development of a set of written instruments and specified procedures which might be used to diagnose the type and extent of the articulation problem within a single school or school system. Some consortium of university and field personnel might become involved in producing a set of diagnostic procedures to be used by local vocational directors systematically identifying articulation problems.

Category #2: Identifying the types of conditions which seem to foster good articulation and those which seem to impede the process.

2.1 What are the relationships between various governmental arrangements at the state and local levels and the articulation of vocational programs?

There are those who believe that the governmental organization itself is a critical factor in the operation of articulated vocational programs. As an example, it may be harder to achieve coordinated programs between public schools and post-secondary vocational programs when the governing bodies for the two types of schools are different.

Working with a group of organizational experts and political scientists, it may be possible to identify the key organizational structures operating in the several states and to conduct research on the extent of articulation problems existing in these sample systems. Such research would no doubt be lacking in tight controls, but it might at least shed some further light on the degree to which articulation depends upon the governmental structure itself.

*2.2 What influence do certain key personnel groups (e.g., board members, school superintendents, vocational supervisors, counselors, and teachers) have on the processes of articulation and what specific personal characteristics seem to encourage better articulation of vocational programs?

Unless we know something about these personal characteristics which lead to greater concern about and success with articulation, we are in a poor position to do anything to improve the situation. Hence, there needs to be research into those qualities which are associated with good program articulation. Similarily, identification of qualities associated with poor articulation could be helpful in setting up better staff screening procedures and in planning staff development experiences designed to improve vertical articulation of vocational programs.

2.3 What role do conflicting philosophies of vocational preparation and education generally have on the

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*Identifies a high priority research question.

development of good articulation practices?

Some people have hypothesized that a certain amount of the articulation problem between the several levels of education (secondary, post-secondary, adult) has to do with the conflicting philosophies exhibited by staff at the different institutional levels. This may be true but we have minimal evidence of major philosophical differences at the several institutional levels.

It may be desirable to conduct research into basic additudinal differences between staff at the several levels. This analysis of differences should focus on views toward how students learn, how much independence they should be given in the selection and conduct of learning experiences, and how they should be evaluated in their respective programs. It might also address the question as to whether the differences identified are serving as a barrier to good articulation of student programs and whether the differences can in fact be changed in any ways other than staff transfer. This latter susceptibility to change relates more closely to the Category #3 research and development area.

*2.4 Are there certain scheduling and instructional strategies more likely to be associated with better articulation of programs?

Under consideration here are a host of hypotheses regarding the relation of certain instructional strategies or methods to the presence or absence of good articulation of programs. These strategies and methods include such things as the time frame used for course sequences (semester, quarter, etc.), the type of instruction packaging (traditional course sequencing, individualized units, independent projects planned by students), and the grading and evaluation schemes employed. The central concern is whether some of these strategies or methods seem to result in better articulation of programs as viewed from the student's perspective.

Category #3: Determining potential intervention strategies or models which might be used to improve vertical articulation of vocational programs.

3.1 To what extent do higher level institutions (e.g., vocational-technical schools and community colleges) incorporate "in lieu of course" options and how effective are such options in achieving improved articulation?

A number of schools have moved toward additional use of the "in lieu of course" options in recent years and have developed specific testing and screening procedures for assessing the merits of these requests for course waiver. As an example, a student who has spent three years working in an auto shop during high school may request a waiver of the two introductory courses in power mechanics at the local community college. If such an "in lieu of course" provision is available at the college, the student would simply take the required test and be placed in the course appropriate to his or her knowledge/skill level.

It would be interesting to compare the barriers to continuous learning perceived by students attending institutions with formal "in lieu of course" options with those of students attending schools where no such options existed. A related area of research interest is the number of students in the different institutions who really exercise the option when available. There is some indication that many students rather enjoy repeating certain types of learning and may not exercise the option for course waiver or substitute.

3.2 What articulation gains most likely result from the use of joint advisory committees?

The joint advisory committee (in this instance, the situation when more than one institution shares the use of an advisory committee) is often mentioned as a quick and inexpensive way of improving program articulation. Yet, there is little documented evidence that such committees result in a better sequencing of programs for students transferring from one institution to the other.

Documenting this kind of evidence might be done in a couple of ways. First, administrators, counselors, and teachers involved in the programs in question could be asked to simply list their opinions as to articulation gains. A more convincing methodology would involve the review of course descriptions in programs and institutions using joint advisory committees with those which do not use such committees. One could also interview representative samples of students in the two types of situations. In both cases, the researcher would be looking for definite evidence of superior articulation in those programs and schools using the joint advisory councils.

*3.3 What are the major barriers to exchanging teachers between the several school levels involved in vocational training and what benefits are likely to be gained from such exchanges?

If indeed the beginning of articulated programming for students is communication among those persons planning and teaching programs at the several school levels, it can be argued that staff exchange may be a very useful means of encouraging articulation in vocational programs. It may also be a factor in breaking down certain philosophical barriers which exist among the various schooling levels.

Certainly, the benefits of such staff exchanges could be documented more completely. Even more important would be a description of how the barriers to such staff exchanges can be overcome. This is primarily a development rather than research task and it may very well include a set of descriptions of actual staff exchanges.

*3.4 What types of joint planning (e.g., career ladder development, program planning, test development, elimination of duplicate courses) are likely to be resisted by professional staff and what steps can be taken to minimize this resistance?

Vocational professional staff at different institutional levels seem quite supportive of joint advisory committees, Joint career days, or other kinds of interaction involving minimal cost or threat to institutional programs. There is evidence that other types of joint planning activity do not receive this same level of support. Experience in one articulation project in the Seattle area showed that teachers were quite willing to plan together the career ladders which form the basis for their individual institutional programs but were much less interested in joint planning of courses or even course sequences.

It might be interesting to test the receptivity of staff to various kinds of joint planning and to examine ways to make joint planning less threatening to the participants. Such research and development will probably require, at a minimum, the use of alternative planning modes in several different settings followed by a measure of staff reaction to these several planning modes.

3.5 To what extent are facilities shared between institutions and what impact does such sharing have on the articulation of programs?

It might be useful to have better information on the amount and types of facilities sharing going on in vocational programs. More important is an appreciation of the articulation impacts associated with joint facility use. There seems to be considerable interest in joint facility use, particularly is light of enrollment declines in selected program areas.

In the teacher training area, there is an obvious potential for joint facility use. Having potential teacher candidates gain most of their skill training in feeder community colleges can certainly limit the need for extensive laboratory facilities at the four-year college level, where more and more of the practicum teaching is being done at field sites. Questions to be examined here would focus on the level of program coordination accomplished when facilities are used jointly as compared to when they are not. Examination of program documents and course descriptions along with selected interviews with students in the two settings would be a suggested method of data collection. It might also be useful to document cost saving achieved through various types of joint facility use.

*3.6 To what extent can better informed counseling and teaching staffs facilitate the articulation of vocational programs across the several institutional levels?

The accuracy and amount of information obtained by students from counseling and teaching staffs can be expected to have some impact on the continuity in the student's career training program. The kind of research and development needed in this area will be fairly expensive; it will entail both training and assessment components along with some reasonable control over general faculty competency levels. In order to examine the impact on continuity of student programs, this level of research should probably be done on a longitudinal basis, adding even more to the time and cost.

Despite the time and cost obstacles, this might be an extremely important area for additional research and could yield insight into the types of staff development programs needed to increase faculty capacity for supplying needed information for students. If information about future learning opportunities is essential to continous career and vocational development, it is important that we develop better ways to deliver this information to students.

3.7 Do career orientation programs involving students and faculty at different institutional levels improve articulation for students enrolled in vocational programs?

Career orientation programs in which a higher level school invites students and faculty from several potential feeder schools, are suggested as one way to increase communication among faculty and to assure accurate information on the part of the students. It might be useful to follow up on some of these programs to assess their impact on students. This would require surveys in which a cross section of student and faculty participants would be asked to assess the value of the activities. It might also be useful to develop a set of guidelines as to how such orientation programs are best planned and implemented.

3.8 What are the more promising models for improved articulation of student programs and what are the cost implications for each?

This is clearly a different sort of question than the others and is purposely placed at the conclusion of the list. It is a development need and depends upon identification of the more successful of the intervention strategies and models considered in previous questions.

The end result of this development activity would assist the vocational director and system administrators in selecting models of articulation most suitable to their own local situation. Perhaps it would result in a document similar to *Student Articulation Between Secondary and Post-Secondary Education* (a pamphlet developed in 1974 by the Texas A & M University Career Education Articulation Project) but with detailed cost figures associated with the several suggested articulation models.

Suggested Approaches in Areas of Highest Priority

Because of the limited time for this activity, it made sense to concentrate the research and development planning on the areas of highest priority. With this in mind, only those areas which were marked with an asterisk in the previous section are considered in these more detailed research and development approaches. Even here, only certain components of each high priority question are considered in the suggested research and development procedures. In all cases, these are only tentative suggestions for research and development and more work will be required in arriving at detailed methodologies.

Question 2.2 -- What influence do certain key personnel groups (e.g., board members, school superintendents, vocational supervisors, counselors, and teachers) have on the processes of articulation and what specific personal characteristics seem to encourage better articulation of vocational programs?

One way to research this area is to do a fairly detailed analysis of the types and levels of articulation in a number of school systems and/or schools across the United States or even within a few selected states. It might be good to describe at least 20 to 30 different school settings. The descriptive work would probably have to be accomplished through interviews and the intent would be to weigh the amount of concern for articulation and the depth of commitment to removing articulation barriers in the many school settings.

Once this descriptive work is accomplished, it would be necessary to intensively analyze key personnel. It might be appropriate to focus on board members, superintendents, and vocational supervisors or directors in the first phase of the research effort and attempt to find out if the better articulated programs seem to be associated with certain types of board members and administrators. At this point, we would be interested in personal characteristics, beliefs, and attitudes of these key personnel. It might also be useful to examine actual policy statements and administrative actions which could account for the varying levels of articulation in the several school settings.

Because conditions are so different in rural, suburban, and urban settings, this type of research might best be done by picking both secondary and postsecondary school settings in each of the basic community types.

The suggested 20-30 school settings would be an absolute minimum, particularly if there is an effort to stratify by community type. The research study will require considerable time, both in the development of procedures for assessing the school commitment to articulation matters and in the designing of procedures for obtaining information on the characteristics and attitudes of key school personnel.

Question 2.4 -- Are there certain scheduling and instructional strategies more likely to be associated with better program articulation?

While there are numerous scheduling and instructional approaches which could be examined, of considerable interest is the building of course units around small learning modules. Many advocates of good articulation of vocational programs have made the claim that such sequencing of instruction is necessary to assure continuous learning by students. It might be useful to do some careful research to examine the impact of such instruction on students' perceptions of the level of articulation achieved.

This research would probably be expensive as it would require the development of a curriculum sequence in such areas as auto mechanics built entirely on small learning modules. This sequence would have to begin with basics taught in the courses in high school and conclude with more advanced work normally reserved for the vocational technical institute or college. Once the course sequence or sequences have been developed, it would be desirable to pick pairs of high school-college institutions in which to install the sequenced curriculum. For each pair of schools agreeing to operate the module-based curriculum, it would be necessary to select a control pair where such instruction is not operating. Student change in these two systems over a series of years would then have to be observed.

Things to watch for in the two systems (one using the module-based approach and the other using more traditional courses) would include the frequency of advanced placement in the program as students move from one institutional level to the next, the varying speeds with which certain types of students move through the curriculum, the attitudes of students toward the two types of programs, and the students' perceptions of the level of articulation achieved in their own learning program.

Certain of the controls may be difficult to achieve (e.g., experimental and control similarity in all respects but the use of learning modules, and the commitment to use of modules in the selected treatment school) and the research would have to be carried out over a series of several years; however, it could yield important insights into the degree of support for the learning module approach among vocational faculty and the level of articulation achieved through the use of this instructional approach.

Question 3.3 -- What are the major barriers to exchanging teachers between the several school levels involved in vocational training and what benefits are likely to be gained from such exchanges?

As mentioned earlier, this is largely a development activity. It would first be necessary to assess the extent to which exchanges have been carried out in recent years, by sampling vocational teachers and administrators in three or four representative states. Having determined the level of exchange activity, it would be desirable to conduct intensive interviews of those persons involved in the exchanges. This would include not only the persons exchanging positions but certain others (e.g., superintendents, business officials, college presidents) who facilitate the exchange. Information gleaned from these interviews would offer first hand documentation of the problems and perceived gains of exchanges. Definite areas of concern would be methods of handling such items as retirement benefits, salaries, student advising, etc.

Once the interviews are completed, it might be useful to write a brief description of the different types of exchanges available, along with suggestions for overcoming obstacles. This description might be useful to vocational administrators across the country as they attempt to sell their superintendents, presidents, and boards on the merits of an exchange program. To my knowledge nothing of this sort is currently available.

If, in a preliminary examination, it is found that very few exchanges among vocational personnel have taken place, it may be necessary to draw inferences from exchanges involving non-vocational personnel at the different school levels. Whatever approach is used, it is important to remember that the aim is primarily one of identifying the potential problems associated with the establishment of exchanges between personnel at different institutional levels. The documentation of benefits gained is of secondary importance and can probably be satisfied by interviews with those persons directly involved. Trying to document these gains based on student perceptions of articulation level seems a futile exercise. The level of control over these exchanges (which have already occurred) is simply too great to waste time looking at questions of student perception.

Question 3.4 -- What types of joint planning (e.g., career ladder development, program planning, test development, elimination of duplicate courses) are likely to be resisted by professional staff and what steps can be taken to minimize this resistance?

One could approach this assessment of resistance by surveying faculty on several joint planning activities. Essentially, a number of planning options would have to be identified and respondents would have to indicate their degree of acceptance of each. The respondents might be asked their reasons for not endorsing some of the planning options. Such opinion surveys are relatively inexpensive to conduct but may offer superficial results. People sometimes don't know the extent of their feelings toward certain types of joint planning without having directly experienced the activity. Furthermore, it is sometimes difficult to describe the precise nature of the possible activities to be considered.

Due to these difficulties, it might make more sense to actually conduct certain kinds of joint planning and then assess the receptivity to these activities. Unfortunately, this approach would be much more expensive in that it would involve support for joint planning. As an example, we might support the development of career ladders under several different conditions and examine the resistance exhibited by staff. As a specific instance, we might want to check whether the development of career ladders to build joint curriculum to be used in the several institutions would meet with less favor than building the same career ladders to design test instruments and procedures to be used on a voluntary basis in the several school settings. This sort of career ladder development work has been started in the Seattle area by a group of teachers working in the so-called NEVAC districts and the level of support has been reasonably high. This support might not have existed in other circumstances. What is proposed here is an effort to evaluate this receptivity in several different situations.

This research might be combined with the search for personal characteristics likely to be most supportive of good articulation practices in vocational education. This, of course, relates to Question 2.2. The concern here would be the identification of personal traits and attitudes which seem to contribute most to career ladder development or other forms of joint curriculum planning. Identifying traits conducive to articulation may later prove helpful in designing staff selection and staff development programs.

Question 3.6 -- To what extent can better informed counseling and teaching staffs facilitate the articulation of vocational programs across the several institutional levels?

Again, in this case, we are interested in whether more complete and accurate information about program sequences makes a difference in the articulation of programs. On a long term basis this kind of research would be difficult to assess due to the many other variables (e.g., home, church, clubs, work, etc.) which impact upon progress in school. In the short run, however, it may be possible to see if better information by counselors and teachers increases the student's perception of options available in the immediate future. While this sort of perception is no assurance of a continuous and articulated training program, it is difficult to see how such a program could be accomplished without this accurate perception of major options available.

One way to approach the research question is to develop at a series of community colleges (or other schools providing advanced training in vocational areas) short orientation programs for counselors and teachers in nearby feeder schools. If students in the feeder schools are tested both before and after their teachers and counselors participate in orientation programs, one could assess the increased student awareness of vocational training possibilities. It would probably be necessary to set up control groups in the same feeder pattern of schools in order to separate that portion of increased student awareness which might be due to increased maturity and other non-school related factors. It would also be advisable to examine this matter in at least fifteen or twenty schools so the results could be generalized to a number of settings. The central research question is whether the increased awareness by teachers and counselors results in any increased understanding of training options on the part of students. We assume, of course, that this increased understanding of training options leads to better articulation or at least increases the possibility of the student selecting the option or options most consistent with current need. This suggested approach to research is admittedly only one small dimension of the total question being raised in this area but it appears to be one which is clearly manageable.

REFLECTIONS ON VOCATIONAL EDUCATION IN TERMS OF RESEARCH POSSIBILITIES

Daniel H. Kruger

Vocational education is one of five major public supported employment and training delivery systems. The other four are (1) federal/state system of public employment offices - the job service, (2) federal/state vocational rehabilitation programs, (3) the work incentive program for welfare recipients, and (4) the Comprehensive Employment and Training Act (CETA) program. To put the vocational education delivery system into perspective it is necessary to analyze what vocational education embraces. It includes a range of courses from an elementary course in cooking and sewing to courses in airplane maintenance and computer technology. These varieties of courses are offered in high schools, area skill centers, technical institutes and community colleges. Each of these institutions is a delivery point or delivery station for vocational education programs.

The planning, development, funding, and implementation of vocational education programs involves seven sets of intergovernmental relations which themselves contain some twenty individual relations. All these relationships shape national, state and local education services. The vocational instructor teaching a course in auto mechanics for fifteen students at the Area Skill Center in Mason, Michigan, is supported by the complex superstructure of administrative agencies and sets of intergovernmental relationships presented in Table I.

Each of the individual and intergovernmental relationships noted in Table I can be the subject of research. It is necessary to identify the more critical of these relationships and then to carefully examine their impact on vocational education. In addition to these intergovernmental relations, there are at least sixteen broad external forces which shape vocational education which are listed in Table II. These sixteen broad external forces cover at least forty-seven subsets. Obviously all are not of equal importance but in reflecting on what shapes the nation's vocational programs these appear to be worth noting.

TABLE I

Sets of Governmental Relationships Affecting Vocational Education

A. Federal Relationships

1. President/Office of Management and Budget/Congress
2. Office of Management and Budget and Department of Health, Education and Welfare (HEW)
3. HEW and Office of Education (OE)
4. HEW/OE and Department of Labor

B. Federal - State Relationships

5. Office of Education and State Departments of Education

C. State Relationships

6. Governor and Budget Office
7. Governor and State Legislators
8. Budget Office and State Department of Education
9. State Superintendent and other units of State Department of Education
10. State vocational agency and other state agencies:
    - (a) State Employment Service (Job Service)
    - (b) State Welfare Agency (WIN Program)
    - (c) State Vocational Rehabilitation
    - (d) State CETA Office
11. State Legislators and State Superintendent of Education
12. State Vocational Education Agency and State Advisory Council on Vocational Education
13. State Advisory Council on Vocational Education and State Manpower Services Council

D. State and Local Education Agency Relationships

14. State Department of Education and Local School Boards of Community Colleges

Table I, continued

E. Local Education Agencies and their relationships at the local level

15. Attitudes of School Board or Community College Board of Trustees toward Vocational Education (including allocation of funds for vocational education)

16. Attitude of Chief Administrative Office of School Board/Community College toward Vocational Education (inlcuding allocation of funds for vocational education)

17. Attitude of other departments of school or college towards vocational education

18. Attitude of vocational education directors toward program and its interrelationship with other governmental programs

    (a) Local Vocational Education Agency and CETA Prime Sponsors

        (1) Attitude of Mayors toward Vocational Education
        (2) Attitude of CETA Staff toward Vocational Education

    (b) Local Vocational Education Agency and Corrections
    (c) Local Vocational Education Agency and Local Welfare Agency
    (d) Local Vocational Education Agency and the Public Employment Service
    (e) Local Vocational Education Agency and Vocational Rehabilitation
    (f) Local Vocational Education Agency and the area Community College
    (g) Local Vocational Education Agency and the area Skill Center or area Technical Center

Table I, continued

F. Federal - State - Local Relationships

19. Federal funds for vocational education which are given to the states on the basis of some formula and which in turn are distributed to local education agencies for vocational education on the basis of certain criteria. Of particular significance are the guidelines of both the Office of Education and the State Department of Education for distribution of funds.

G. Federal - Local Education Agency Relationships

20. Federal grants given directly to local education agencies for demonstration projects.

TABLE II

Sets of External Relationships to Vocational Education

A. Attitudes toward vocational education of the following students:

   1. Black
   2. Hispanic
   3. White
   4. Male
   5. Female

B. Attitude toward vocational education of the following parents:

   6. White
   7. Black
   8. Hispanic
   9. By socio-economic class

C. Attitudes toward vocational education of the following employers:

   10. National firms
       (a) Local branches
   11. Local area employers
       (a) Private sector
           (1) Large
           (2) Medium
           (3) Small
       (b) Public sector

D. Attitude toward vocational education of the following employer groups:

   12. Chamber of Commerce of U. S.
   13. State Chambers of Commerce
   14. Local Chambers of Commerce
   15. National trade associations
   16. State trade associations
   17. Local trade associations
   18. Interaction with these groups

       (a) What works
       (b) What does not work

Table II, continued

E. Role of local occupation/trade advisory committees

  19. Extent to which they interact with employer groups (see "D")

F. Attitudes toward vocational education of the following unions:

  20. AFL-CIO
  21. Large international unions
  22. State AFL-CIO federations
  23. State building trades councils
  24. Local AFL-CIO federations
  25. Local unions
  26. Note: Do those building trades unions which have extensive apprenticeship programs see vocational education programs as competition?

G. Attitudes toward vocational education of the following community based organizations:

  27. National Urban League
      (a) Local affiliates of National Urban League
  28. National Opportunities Industrialization Centers
      (a) Branches of Opportunities Industrialization Centers
  29. National Service, Employment and Rehabilitation
      (a) Local branches/chapters
  30. National Association for Advancement of Colored People (NAACP)
      (a) Local chapters

H. The educational establishment (associations)

  31. American Vocational Association
  32. National Education Association
      (a) State Education Association
  33. American and State Federation of Teachers
  34. Other national and state teacher groups with an interest in vocational education.
  35. State associations of vocational education directors
  36. National and State School Administrators Association
  37. National and State Association of School Boards
  38. Other national or state groups with an interest in vocational education, e.g., Association of Community Colleges (the groups that testified on the 1976 amendments)

Table II, continued

I. Publications dealing with vocational education

39. Note: What is their impact on vocational education and who reads these publications?

J. Business - Education groups and their involvement in vocational education.

40. Examples:

(a) National Association for Industry/Education Cooperation
(b) Industry Education Councils of America

(Note: What do they do to foster vocational education?)

K. Universities and the training of vocational teachers

41. What are universities/colleges of education and colleges which prepare teacher doing in the preparation of vocational teachers.

(a) What are the curricula and emphases?
(b) Are vocational teachers being adequately prepared to deal with both internal and external forces affecting vocational education?

L. Certification of vocational teachers (This is both internal and external)

42. (a) What is the current status of the state certification laws for vocational teachers?
(b) How do these laws handle the non-certified teachers in vocational education?
(c) How do laws certifying auto mechanics affect vocational programs in auto mechanics? (e.g., Michigan)

M. Impact of collective bargaining on vocational education

43. Many states have laws which permit public employees, including public school teachers, to engage in collective bargaining. Even in the absence of a state collective bargaining law, school districts sometimes engage in collective bargaining. There is a need to determine if collective bargaining in public education has created any unique problems for vocational education.

Table II, continued

N. The impact of private occupational schools on vocational education

44. The private occupational schools are growing. Why? Are these privately owned schools in competition with publicly supported vocational education? To what extent are these schools involved in institutional training supported by the Comprehensive Employment and Training Act? Why are these schools involved in CETA programs rather than public vocational education programs?

O. The counseling establishment.

45. What are the attitudes of school counselors towards vocational education? (This is also an internal factor)

46. What are the attitudes of national associations of counselors/guidance towards vocational education?

P. The interrelationship between apprenticeship programs and vocational educational programs.

47. There were approximately 255,000 registered apprentices in the U. S. at the end of 1976. Little is known about the relationship between apprenticeship programs and vocational education. For example, how many students in vocational education courses move on to apprenticeship programs? Do apprenticeship programs draw off potential students in vocational education? Still another area of investigation is the training centers operated jointly by building trade unions and contractors. What impact do these trade schools have on apprenticeship programs? To what extent is vocational education involved in the classroom training in apprenticeship programs?

Research Questions

The intergovernmental relationships and external factors outlined in Tables I and II shape the nation's vocational education program. There is need, however, to identify what constitutes "a good vocational program." This is a deceptively simple question. Each of the major actors in the vocational education system probably has different criteria. The major actors are (1) student, (2) parents, (3) school administrators, (4) vocational educator director, (5) the vocational education instructor, and (6) the employer. It would be extremely useful if their perceptions of what constitutes a good vocational program could be identified. Such a project would help put the roles of the major actors into perspective.

It appears that the term vocational education is meaningless. It is too broad. A cooking class in high school is not the same as an institutional cooking class in a community college yet both fall within vocational education. There are other examples which blur the objectives of vocational education. This raises the question, what are the objectives of vocational education? The identification of objectives is related to what constitutes a good vocational education program.

Earlier the major actors in the vocational education delivery system were identified. The vocational education instructor is one of the major actors. An interesting study would be to analyze the job descriptions of a selected number of vocational education instructors to learn what the school administrators expect of them. The vocational education instructor is different from a math teacher or an English teacher, for the vocational education instructor if he/she is on top of his/her job must relate to advisory committees, employers, etc., whereas the math or English teacher, for the most part, operates in the classroom. If the pay is the same for both teachers--the math teacher and the vocational education instructor--the latter may say to himself or to herself, "Why should I relate to the groups outside the school when the reward system gives no recognition to this job function?" This situation suggests another area of study, namely, salaries of vocational education instructors as compared with other teachers. All teachers are not worth the same but the salary schedules prevalent in public schools assume that they are. The reward system may be a key factor in explaining the poor articulation.

The reward system is also influenced by collective bargaining and it is for this reason that collective bargaining was included in the external factors affecting vocational education (see Item M).

Vocational education is funded from federal, state and local sources. Without local support of vocational education in Michigan, the program would be only a fraction of what it is. The federal government contributes about $24 million, the state appropriates about $26 million and the local school districts raise about $102 million. Federal funds represent only 16 percent yet the federal regulations assume major importance. A similar observation can be made about the state's involvement. The relative small general and state contributions to vocational education may help to explain some of the tensions between local education agencies and the federal and state partners.

Another general problem area of vocational education is the quality of placement services. It is not known how many schools/vocational programs have placement services. The manner in which vocational education programs seek to place their students is an area of investigation which could provide useful suggestions to school based placement services. Moreover such a study would identify interrelationships between the school based placement services and the publicly supported Job Service. In addition, information is needed on the extent to which CETA prime sponsors have financially supported school based placement services. Table III attempts to outline the questions and issues related to coordination and articulation.

TABLE III

Articulation and Coordination of Vocational Education with Other Programs

I. Definitions and Objectives

- A. Definition of coordination
- B. Definition of articulation
- C. Differences between coordination and articulation
- D. Objectives of coordination - why important?
- E. Objectives of articulation - why important?

II. With what groups and institutions is coordination desirable?

Note: If the goal is better coordination then it is necessary to examine what groups should be involved. These groups vary from community to community depending on size, location and what is available.

III. With what groups and institutions is articulation desirable? (see Note in Item II)

IV. Why should vocational education be coordinated with other programs?

- A. What will the vocational education programs gain or lose?
- B. What will the other agencies/institutions gain or lose from coordination?

Note: Coordination involves a kind of exchange theory, namely, what does one give and what does one receive in return from coordination? The exchange theory in my view differentiates articulation from coordination. In articulation, information is usually exchanged, but in coordination, the emphasis is on programmatic considerations. Articulation is therefore, in my view, easier to accomplish than coordination.

V. Who will do the coordinating?

If the goal is better coordination, then someone must do it or take the initiative. Taking the initiative does not guarantee a response from the other agencies or programs. There must be some kind of exchange theory operative (see Note in Item IV).

Table III, continued

VI. Identification of Barriers to coordination in specific communities

  A. No financial incentive for effective coordination

  Note: Staff members are usually not rewarded for effective coordination. An interesting project would be to review job descriptions of vocational instructors and vocational education directors to learn if one of their job responsibilities is to coordinate. If coordination is not part of the job description, it is doubtful whether anyone would take it seriously.

  B. Differing enabling legislation
  C. Differing organizations
  D. Differing criteria as to what constitutes "effective coordination"

  Note: These barriers can be examined through surveys and questionnaires of those agencies which should be involved in some form of coordination.

  E. Differing levels of coordination

  Note: As an example, one level of coordination is to refer clients of one agency to another agency. Another level is for one agency to give funds to another agency to perform services for the former agency's clients.

VII. What can be done to improve coordination?

  A. Do agencies want to be involved in coordination?

  Note: Employment and training agencies are already involved in some levels of coordination without knowing it. These aforementioned levels of coordination need to be clearly identified so that agencies can begin to eliminate these impediments.

Need Area: Curriculum Content and Instruction

Calvin W. Taylor Professor of Psychology University of Utah Salt Lake City, Utah	Think Piece on Transferability
William C. Knaak Superintendent Special Intermediate School District No. 916 White Bear Lake, Minnesota	Competency-Based Vocational Education, Needed Research

THINK PIECE ON TRANSFERABILITY

Calvin W. Taylor

Preliminary Comments

Written as a think piece, this report captures the main ideas about transferability that have occurred to me over the years or that are now troubling me. One of my musical friends once recommended that a composer should compose just the right amount, not too much or too little. In this way he/she leaves enough room for the performers to add their talents so as to make the total effort most effective. This paper approaches that state.

Although I am not involved in day-to-day work in vocational education, my basic research has been career-competency based. During the last few years, I have worked several times with the National Center for Research in Vocational Education at the Ohio State University. Most relevant to this paper was my work with the National Center's project on transferable skills (see references).

Pratzner (1977) lists examples of transferable skills and characteristics within the following sections:

1) Summary of Generic Skills
2) Attribute Requirement Inventory

    a. General Vocational Capabilities
    b. Cognitive Abilities
    c. Psychomotor Abilities
    d. Sensory Capacities
    e. Interests
    f. Needs

3) List of Attributes Developed by Mecham
4) Occupational Survival Skills
5) Composite List of Transferable Skills

It is assumed that the reader has access to the reports from the National Center's project on transferable skills. I have tried to write this think piece as taking off from and going beyond those reports.

I. EARLIER RECOMMENDATIONS ON TRANSFERABLE SKILLS

As a result of this earlier project, I drew at least two conclusions. First, some attributes are more central to people's total set of career and life performances and therefore are widely needed with at least moderate spread effects. If these attributes were the focus of education and training, students could obtain from such programs great benefits both for their careers and lives. Second, selection and training programs should be as much "on target" of their ultimately desired performances as possible if transfer or spread effects are to appear very noticeable.

In this area increased activities need to be sparked by educational foundations and others (a) in constructing new measures for identification, evaluation, and assessment purposes, (b) in basic research focused upon the issues of acquisition, retention, and transferability of knowledge versus transferability of attribute processes (talents and skills and personal characteristics), and (c) in R & D and implementation of the findings and new procedures developed.

As a psychologist whose prime focus is people, my overriding conclusion is that Transferable Skills and Characteristics (i.e. transferable attributes), is by far the most important area in which money could be spent on education. In our own work we have called this approach talent-focused education, with emphasis on the most important and most transferable attributes. Compared to other approaches now available, this approach has time and again produced the most positive research evidence for bringing about a major improvement--even a revolution--in education. Furthermore, it offers a double-barrelled curriculum approach in which students grow both in knowledge and in transferable attributes. The product of such an educational program is not only a knowledgeable but also an effectively functioning, multiple-talented (or skilled) person who has many resources fully activated within himself or herself. These multiple resources are transferable and make the person both useful and valuable as a citizen and highly employable, transferable, and promotable as an employee.

The funds could well be spent in supporting basic research on other intellectual and nonintellectual attributes not yet well isolated, identified, and measured, which could then be strengthened through educational training. These include human interrelations, self insights, personal attributes, etc. They could also be used to develop curriculum materials and approaches to cover all the important transferable talents and attributes that produce highly effective persons and employees. Further funding should go to implement these materials when they have been sufficiently developed for use.

Finally, funding is needed on new instruments for identifying each transferable attribute, for measuring improvement in these attributes through training, and for assessing training and education programs focused on important transferable attributes.

In summary, the nation should spend an extremely high percentage of its current public and private funding in educational research, development, implementation, and measurement activities focused on multiple transferable attributes in students. In fact, according to all indications, the majority of the foundation funding in education would be well spent upon attribute-focused education. It would not be more money down the same old drain, with little or no change or improvement in what happens to students in classrooms. Instead, it could bring about major improvements in all fields of education and training.

II. SOME BROAD PROBLEM AREAS

General Issues

This paper will not be limited to vocational education, even though vocational education is to be congratulated for having such an interest in transferability. All of education will be covered, with some emphasis on vocational education, where probably the highest degree of transferability is occurring within formal educational programs, especially in those linked to on-the-job performance.

The concept of transfer or of transfer of training is undoubtedly one of the most basic notions in education, both in formal school programs and in all kinds of learning and training situations. Transfer of training or the transfer of learning is highly important, even if limited to the formal education system. This concept is even more potent when considering the kinds and amounts of transfer of training that occur from formal educational systems to careers and to other (non-school) life activities. Transfer that occurs throughout one entire lifetime, such as in lifetime learning from experience, in lifetime self-education, in lifetime training and learning on jobs, etc., is also important.

One of the main issues in transferability is the complexity versus the simplicity of people, jobs, and situations, including working conditions and organizational climate. The more a person believes in complexity, the less he/she can believe in or bet on the broadness of transferability or spread effects across all kinds of activities and situations. Therefore, the more that a person believes in complexity, the less he/she expects from transferability, and the more he/she feels that training should be fully aimed at "the target."

If little or no transfer of training of any kind were occurring, it would be very difficult to defend the existence of such a training or educational program. It is therefore important for education to determine each and every type of transfer that is occurring and to determine to what degree each education and training program could be improved as far as desirable transfer effects are concerned.

Learning and Retention Curves

It has been said many times that education is what is left over after one has forgotten what was learned in school. The typical learning and retention curve starts with a rapidly rising curve, turning gradually into a more slowly rising, "diminishing returns" curve. The curve rises less and less with continued training on the same material or skill processes, after which the learning practice in a training program tends to cease and the retention part of the curve starts to predominate. The typical retention curve then drops sharply and tends to sink close to the original baseline.

The most striking phenomenon is not the amount that has been learned and retained, but instead the amount that has been forgotten. This rapid forgetting process will continue to occur but will turn into only a slight fading-away process after the large amount of forgetting has occurred. This occurs if no opportunities arise to relearn or to reuse what has (earlier) been learned.

In later opportunities to practice or use the learned knowledge or skill, however, the learning curve will rise again, rising even more sharply and to a higher level per unit or practice than occurred in the initial learning. After this later period of practice the retention curve will drop again but less sharply and to not as low a level as the initial retention (or forgetting) curve. Thus, the more later opportunities for relearning of further skill use the higher the learning curve will rise and the greater the retention for later use or transferability.

Generality Index of Transferability

In our studies of creativity one of the working definitions we have used emerged from NASA evaluations of the creativeness of their scientists. The definition used was based upon the notion that the wider the breadth of applicability, the greater the creativity. For example, if a scientist on a project solved a problem on that project and his/her entire process and solution had no applicability to any other project or problem, this was considered the lowest degree on the scale of creativeness of the contribution. On the other hand, if a solution or a problem could be found to be applicable in a wide range of other areas or other scientific problems, this would indicate a high degree of creativity.

This same type of scale could be developed to measure a "generality index" of transferability (or spread). This index could be used to measure different kinds, facts, ideas, contributions, principles, methodology skills, etc., in terms of their span of applicability. This "index" could even be applied to those personal attributes and other lists presented in the first section above from Pratzner's report. In summary, the wider the applicability, the greater the possibility for later transferring of that knowledge or skill.

Frequency-of-Occurrence Index of Transferability

The idea here is that the more frequently a skill occurs in school, career, and life, the more it will be retained and available for transfer into many of these activities. In working with groups of teachers in inservice training, I have often had them list activities that adults do in their work and life. After they generate a long list, then they search for some skill common to these activities. For example, skills like ice skating would not be used in many adult activities; however, the frequency of using a skill of balance would be much greater. In the lives of most adults, talking is another skill which probably is used more often than writing.

We can further illustrate why we selected the set of six talents first used in our Multiple Talent Totem poles. We asked teachers to look at a long list of activities to see how often planning talents are called for across these activities. Typically, we found that all or nearly all of those activities called for planning. We next raised the same question about decision making. We few exceptions, decision making was called for in all of the activities on the list, and so on.

This suggests that each of these talents is very broadly applicable and would be important in terms of transferability. When functioning effectively, these talents would initially make a person more employable upon leaving school, more able to be transferred from one job to another within an organization or even across organizations, and more promotable to higher-level jobs. They would therefore be generally more useful and valuable to themselves and to others.

Consequently, a listing of knowledge, skills, and talents, according to their frequency of use in school and in other working and living activities, could be studied and developed as one of the important underlying bases for predicting positive transfer.

Verbal and Verbalizing Activities

Vocational education is perhaps involved in non-verbalizing in training and performing more than most of education, which is both highly verbal and often calls for verbalizing as well as actual performance. In the latter case, the person is required to learn the performance and then also describe how to accomplish the performance.

It is my hunch, one that could be checked out by research, that the majority of people are both non-verbal and non-verbalizing in career and life activities. Even when verbalizing is required, many performances can be more non-verbal and non-verbalizing in career and life activities. Even when verbalizing is required, many performances can be more non-verbal than verbal. Consequently, the transferability of verbalizing versus non-verbalizing performances should be studied.

The first study which brought this strongly to my attention was Lorraine Loy's 1969 dissertation under my supervision. She found that after a non-verbal performance had been learned, it was later performed more effectively than were performances which had initially been verbalized as well as performed. In that case--and perhaps in many nonverbal performances--the usual academic rule is reversed, with many educators in effective saying, tell me how you did the performance, then you will be able to repeat the nonverbal performance better later." Loy's finding could be extremely important because the large majority of human performances are probably nonverbal (except in school).

The second study is equally provocative, although it is much more preliminary than Loy's. It concerns itself more with verbal versus non-verbal than with verbalizing versus non-verbalizing. Cecelia Flint at Brigham Young University just completed a study in 1978, the first of its kind that I've seen, on verbal versus non-verbal creativity. She tested monolingual and bilingual students in Costa Rica, who were equal in verbal creativity. Surprisingly to many educators, however, the monolinguals were more nonverbally creative than the bilinguals.

Both cases above may be dealing with important pre-expressional thinking processes, most of which are non-verbal or preverbal (except for schooling effects). Whenever schooling deals almost solely with verbal thinking and verbalizing, other important pre-expressional thought processes (including creative thinking) may be curtailed and stifled so that they occur with much less intensity and frequency than would have happened naturally.

The creative process, largely non-verbal and really not well known or understood, has been verbally described in many ways, but the description most relevant to this paper is presented below. One noteworthy feature of the creative process is that those who find it occurring within them often seek thereafter to have it occur again and again throughout their lifetime, whether they are faced by similar or radically different types of problems. This re-occurrence seems to be sought after as a rewarding experience for the creatives. In one sense therefore it shows transferability, from one problem task to another and from one time in life to another.

Much of the creative process, for example, is most likely preconscious, nonverbal or pre-verbal, involving large, sweeping, scanning, deep, diffused, free, and powerful actions of almost the whole mind.

The five stages of the creative process can be internal and non-expressible in many persons until the last stage or two, but even the last stage could involve important non-verbal processes. If there is a sixth stage it might be the repetition of the process later on.

III. AREAS OF RETENTION AND TRANSFERABILITY

Most of the educational programs in the nation probably are primarily knowledge-focused and only secondarily skill-focused (or even people-focused). As has been said, one can determine the type of program or program emphasis by examining the nature of the testing in the program. Probably the largest number of classroom educational programs are primarily knowledge-tested. The transferability of knowledge is thus covered, as well as the transferability of skills. In common language, these two, when combined, constitute the concepts of both "know" and "how" and know-how is certainly a double focus in vocational education. Consequently, one research question concerns the likelihood of transferability of both know and how, especially if both are needed in a later activity.

Since so much of education is knowledge-focused and knowledge-tested, an issue arises as to whether knowledge-focused education develops as by-products a wide range of multiple basic skills and high level talents of students. The alternative question is whether there is little growth in a wide band of the basic skills and high-level talents, or growth only in that very narrow skill band which is repeatedly used and which we have called basic academic skills.

It is necessary now to determine not only whether talent-focused education develops a wide band of skills and talents in students, but whether a wide band of knowledge is developed as a by-product. A further question is whether talent-focused education causes students to process knowledge in ways different from knowledge-based education, and, if it does, whether those learning from talent-based education have more working and lasting knowledge, knowledge which is more fully retained and more readily available for transfer. In other words, the question is whether talent-focused education does a better job than knowledge-focused education in fostering growth in both talents and knowledge. If it does, then there should be more transfer of both knowledge and talents in later activities.

Knowledge Retention and Transferability

In knowledge-focused education, there is a strong possibility that knowledge acquired in different classes will be learned and returned on tests without much opportunity to use it in later courses or in out of school activities. For example, there is a good chance that some technical chemistry learned in a science course in junior high or high school will not be required even in later years of schooling, let alone during the rest of one's life. That knowledge will thus be largely forgotten or not available for later use and transferability. This would also be true of learning to write, talk, or listen in a foreign language if this language is never again used after the class if finished. It may slip away almost as many telephone numbers are quickly forgotten after dialing, never to be used again.

A major research need is to study the learning and retention curves of the various kinds of knowledge and subject matter used in vocational education programs as well as individual differences in these learning and retention curves. These studies should not merely be done strictly in research laboratories, nor with nonsense syllables, but in regular classroom situations covering typical subject matter. From such curves, one might determine which types of knowledge would be retained better and be more available for later transferability in classes or in regular living activities. In this way, the various types of knowledge could be classified into less forgettable or more greatly reusable, thereby increasing transferability. High fading knowledge could then be made available through handy reference systems on computerized access.

There may be many different kinds of knowledge, each having its own transferability "index." For example, I have often said that there is nothing as practical as real insight -- and nothing as impractical as no real insight. My belief is that one great insight can be readily applied in practical situations and would have a high transferability index compared to an abundance of detailed unrelated facts in a field. Research could be done in different types of knowledge or subject matter to see what the transferability index would be with each type.

A caution about high transferability of knowledge seems appropriate. A new principal of a junior high started to emphasize educational improvement in his newly assigned school. He had supportive responses from teachers in every area except one. Then he discovered that the students in that one area had topped the district the previous year in the standard achievement tests being used district wide. Therefore the teachers in that area had some official justification for being pleased with what they were doing in their teaching. They were "on top of Bunker Hill" as far as their standing in their district, the largest district in their state.

The principal then wondered what would happen if he were to assemble and retest the students who had scored so high. He did this and the students all did very poorly. This suggests that knowledge gained from knowledge tests is not necessarily retained.

It reminds me of the great concern that I and many others have had about taking one final comprehensive exam over all the subject matter they had learned in their high school (or college) courses. The above results suggest that this is not an unreal fear. Not much total knowledge might be left to readily display on tests; nor would it be easy to brush up on all that knowledge in a reasonable period of time.

Along with this problem is whether the combination of knowledge or talent may be potent. For example, one talent, called expressional fluency, describes whether a person can express essentially the same idea in different ways. If he/she can, it suggests both good insight and the ability to state and restate that insight in many ways. This combination of knowledge and talent would seem to have a higher transferability index than the insight-talent combination shown by a person when he/she reads or recites exactly, or perhaps from memory, famous quotations or rules or principles. This insight-talent combination is undoubtedly a great asset in teachers, parents, and supervisors.

Skill Retention and Transferability

All the above logic could apply to the initial learning and retention and to future opportunities for re-learning and re-using particular skills. The learning and retention curves for particular skills, especially those used in vocational education, should be studied and graphed. Of particular interest would be whether a higher percentage of the learned skills is retained better than learned knowledge. That is, are typical skill learning and retention curves different and better for transferability than typical knowledge learning and retention curves? Our general hunch is that they are, especially for some skills like riding bicycle and roller (or ice) skating. Some of these skills might differ by being well retained without practice, while others would require practice to be retained.

Major issues are whether skills are acquired more easily and/or retained more fully with more opportunities for later use and re-learning and whether those skills would be retained longer than the knowledge typically learned in vocational or other types of education.

Retention and Transferability of Talents (High-Level Skills)

Some of the training activities for students in vocational education undoubtedly involve a considerable use of lower level skills, such as using manual dexterity, eye-hand coordination, working on assembly lines, etc. Others emphasize higher level skills calling for higher level brain processes or what we have called "talents." There is the possibility that both lower level motor skills and higher level brain talent could have higher retention curves and greater possibilities for future use than does the knowledge received by a high grade-getter in school.

My professor, L. L. Thurstone, was originally a mechanical engineer who later obtained a doctorate in psychology. One of his frequent complaints was that if a person is doing poorly in academic work, he/she is often advised to go into vocational education, such as mechanical training programs. When Thurstone did factor analysis studies on mechanical abilities, he found that most mechanical abilities were in the head rather than in the hands. All of us can agree we want a person with top mechanical brains to work on our automobile or on the airplanes in which we fly.

There is a strong possibility that the higher level brain processes or talents (such as anticipating, planning, and decision making) have a greater opportunity for re-use, a greater frequency of occurrence in adult and career activities, and a higher spread effect or breadth of applicability than do specific lower level skills or knowledges. This should be determined by basic research and research in typical classrooms and training programs as well as by analyzing career and other lifetime activities. Some have also claimed that cerebral functioning is a person's most dependable servant over his/her life. They point out that his/her sensory and motor performance may become impaired but his/her brain may still be functioning very clearly. It needs to be determined whether lower level skills, subject matter knowledge, or high level talents are retained and which function most effectively throughout one's lifespan.

Retention and Transferability of Personal Attributes

In the earlier Ohio State project, the title "Transferable Skills" was stretched to include "Transferable Skills and Characteristics" and occasionally was called "Transferable Attributes." This section emphasizes those other personal characteristics (attributes).

Certain personal attributes may be displayed and used more often when functioning effectively. For example, motivation sparked from within to perform well might have high transferability. Other personal characteristics might repeatedly prove to be assets in different situations and activities. For example, persons who break easily into a catching smile or even into an infectious laugh can utilize that attribute many times in many ways, mostly with a positive effect. A person with initial stage fright might break into a big smile before starting a speech, thus disarming the audience and gaining their support. Likewise, the ability to break the ice and strike up a conversation and keep it going with another person could be a valuable and widely-used attribute in many, many situations, such as in door to door selling, interviewing, in being interviewed, in making suggestions or in giving suggestions or feedback.

The characteristic of empathy, though not yet well understood, can help establish a rapport and understanding between two people and thus should prove to have a high transferability index. These attributes would have a high frequency of opportunity so they could be practiced, developed, and readily available for future use.

Lack of knowledge or lack of job skills are not the main reasons people do not succeed in jobs. Instead, the reasons tend to be more due to lack of personal skills or characteristics, including personality, establishing interpersonal relationships, self-motivation, self-discovery, self-management, socializing and political characteristics, etc.

IV. THE POTENTIAL RELEVANCE OF PREDICTION STUDIES TO TRANSFERABILITY

Early research on transfer of training often stated that there had to be common elements between the initial training and the later performances for transfer to occur.

Prediction research in personnel and other programs depends upon the ability to forecast later performances from earlier attributes, training, and performances. In other words, if there is considerable transferability of earlier trained and measured aspects of an individual, then these will provide bases for predicting later performances. This implies there is something measurable from the earlier training that transfers over to produce a definite relationship.

Match of Training Activities and Job Activities

In order to match a person with a job, he or she is sometimes asked to perform on tests or in classroom activities or work samples. Then these and other measures form the basis of predicting later performance in some specified activity, job, or performance.

In reality, this matching of the workers and the job is a double-match situation. One research need is to determine the degree to which the later worker is the same person as he or she who was measured earlier. The second need is to determine the degree of similarity between the characteristics of the earlier activities and those needed in the job later. Possibly the greatest success in this sort of prediction studies has been in predicting school grades from earlier school grades.

The most disappointing area of prediction has certainly been in predicting adult career and job performance from school performances and grades. Typically little or no relationship has been found with rare exceptions occurring in the entertainment fields, where campus activities are very much like the later professional performances. Those who have studied transfer of training have typically found little transfer taking place. The traditional recommendation was to train a person in exactly what he or she is going to be called upon to do.

It has become possible, at least with certain human characteristics and performances, to build parallel forms of tests. One activity can thus be substituted for another activity with essentially identical results. It is possible, for example, in one class with one teacher, that test scores on subject matter in later chapters in the course can yield almost parallel results to earlier test scores. Of course, this is true only if the student's effort and other conditions are essentially the same.

This relatively high-level of parallelism is much more likely to occur in schools than between schools or jobs or between jobs and other jobs. It is no doubt troublesome to educators to hear that school grades are such poor predictors of later career performances. In fact, this has sometimes been called the best guarded secret in education. This lack of predictability is undoubtedly less true of vocational education programs than those programs offered in general education, graduate education, and even professional education.

It is undoubtedly even more troublesome to educators, especially curriculum specialists, to find that measures of students' extra-curricular activities are better career predictors than grades. One partial explanation for this is a lack of common elements between school activities and world of work activities. To illustrate the problem, if ten or more variables are involved in the training activity and situation and only one or two of these are transferable to the more complex job activity, these two variables cannot predict highly or transfer very potently to the later situation and performances.

When students are considered merely as classroom learners of knowledge, they are learners-and-returners, continually working under close supervision and direction. One of my students asked "where can you earn a good salary in the world-of-work by telling your boss exactly what he has told you?"

This lack of correlation between school and world of work performances also suggests that the person and situation may be as different as the activities and the tests performed. In fact, one of the frequent statements among persons doing prediction studies in personnel work is that there is a ceiling to the level of correlation found in prediction studies matching workers and jobs. This may be because variables other than those concerning the person or the work activity are not controlled or used in the prediction equation.

Triple Match of Person, Job, and Situational Variables

In our first major attempt to use working condition variables as a predictor of job performance, we studied the productivity, creativity, and other accomplishments of scientists on the job in a large research center in the San Francisco area.* Surprisingly we found many multiple correlations of .5, .6 and even .7 between measures of the working climate of scientists and indices of their individual performances, suggesting that a three-way match is needed. This is actually a three-way double match between the person at two stages, the training versus the job, and the training situation versus the job situation. If there are many mismatches, there will be low correlations at best, indicating low transferability.

If the focus in education were on human characteristics, it would be possible to develop many valuable attributes, but they may never be needed because of the absence of both appropriate situational variables and appropriate performances in working situations. Stated in reverse, the attributes being trained in the educational setting may not be those called for in the work situation.

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*An Investigation of Organizational Climate. Robert Ellison, Blair McDonald, Lawrence James, David Fox, and Calvin W. Taylor. Published by Creativity Research Institute, Richardson Foundation, Piedmont Building, Greensboro, North Carolina, 1967 pages, 1968.

Curriculum specialists in vocational and other educational programs can establish appropriate situational variables and also prescribe the activities to be performed in the earlier learning and training situations. They can also try to prescribe how to elicit certain skills, talents, and other human characteristics as well as outlining what knowledge is to be acquired. Then the student may have enough of the necessary combination of know-how to function effectively in the later activities. This "total curriculum approach" could more nearly insure the greatest prediction or transferability effects.

The research suggested here is more a matter of defining the full target, together with clarifying and measuring the attributes involved, the human performances, the situational variables in the climate or working conditions, and the variables in the job or performances. These need to be reduced to a workable number of variables in each case, by singling out the most general variables for the greatest attention, and those variables used most frequently in accomplishing the most effective transfer (or prediction) from an earlier to a later situation.

Measurement of Climate (Situational) Variables

Our measurement research has yielded a Student Activities Questionnaire (SAQ) for classroom climate and teaching processes therein plus a Management Audit Survey (MAS) for use in large organizations.** Situational complexity is indicated in our MAS findings by more than fifteen organizational climate scores (all involving different factored dimensions). Thus, if one were transferring from one situation to another, the climate variables could support transfer effects if enough variables of the situations are identical or similar, but could be quite damaging if many or most of the variables have changed radically from the initial situation.

Another main finding is that in a large organization with many subdivisions, the climate is not at all uniform, but can change considerably from one sub-unit to another. Just as individuals differ, so can organizational sub-units differ in

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**These are available from The Institute for Behavioral Research in Creativity, 1570 South 1100 East, Salt Lake City, Utah 84105.

all the measures we have taken. One example of our findings is that in a sub-unit where the climate for innovation is high, the training costs are low because the innovative people can figure better and better ways to do things. In contrast, where the climate for innovation is low, the training costs tend to be high because "everyone must be trained in the official way".

Another example of the effect of the working climate upon a person's performance is illustrated in athletics, where a player can get traded to a different team and work under a different coach and different organizational policies and conditions. Some players, when traded, suddenly bloom, especially when playing against their former team.

V. SPECIAL PROBLEM AREAS

Transfer from Training to Testing

Another kind of transfer of training occurs when attributes displayed in day-to-day classroom and homework activities are displayed on class tests. Other variables, though, such as test taking anxiety, can act to prevent a close relationship between classroom training performance and periodic test performance.

Another concern is whether test performances in school will correlate with what may be considered test performance on the job. Our lengthy experiences in large testing programs are that school tests will not correlate highly with on-the-job types of tests. Most people who build tests are academic products and know how to build academic tests. When I ran the Army-Wide Trade Testing Program, we gradually learned how to construct tests so that they become more and more job-like instead of school-like. On the tests we required functioning to be job oriented in job-like settings. We also produced items and procedures that were less verbal than those on the usual school tests.

Later I directed a new type of project for the Air Force entitled Training Needs Tests, which yielded a profile of scores on subcomponents of each of several technical Air Force jobs. For a person to be an airplane mechanic or other specialist, he had to score above the minimum on each and every part of the test profile. In this way we discovered in which areas he needed more training in order to be fully certified. Again, we were able to produce tests which were job-like rather than school-like. It was found, however, that because the tests used for promotion in the Air Force were more school-like than job-like, the Training Needs Test Program was seen as a threat to the well-established program of tests used for promotional purposes for enlisted personnel. We suggested that all of these promotion tests should be revised to become more job-like and therefore more sound.

From these experiences educators are in a position to provide the know-how in training manuals and to explain how to build job-like tests for use in schools. If these tests were used and if classroom training performances still did not transfer over well to the job-like tests, it would be evident that the classroom performances require change so that positive transfer could occur.

Self Educating and Learning From Experiences on One's Own

Learning how to educate oneself could be the most important of transferable skills or talents. In a way it is a fill-the-gap talent. When all transferability that will occur has occurred and a person is still not capable of functioning at the desired or required level of performance, he/she is often on his/her own. He/she must train or educate himself/herself for the remaining requirements of the job through practice, self evaluation, self guidance, etc. Since the correlation is often low between training performances and job performances, those who excel in the latter tend not to be those who are earlier teacher-pleaser grade getters, but those who have educated themselved on the remaining aspects of the job. Self-educating could therefore be one of the most potent trainable skills or talents involved in all potential transfer situations.

One negative example here is our evidence that medical students who were the highest grades getters and thus possessed the most knowledge at the time of each test were not necessarily those who were most knowledgeable after graduation. Every ten years general medical knowledge almost doubles. The study skills used in obtaining grades in medical school, however, do not transfer sufficiently to become the skills used by practicing physicians to keep abreast of knowledge during the following decades. Those who discover how to learn most effectively on their own, and not those who once got high grades in college, will be the ones who remain most knowledgeable.

Awareness or Reality Training About Transferability

Experiments ought to be conducted to determine what merit and what effects there would be if students were given direct awareness training or "hard reality" training about all the topics on transferability covered herein. This could include educating themselves in areas where much, if not most, of the later performances would not be taken care of through transferability of earlier training; thus, they could not expect to lean too heavily on their past training or education for full future success. They could also take awareness and reality training on their own complexities, on the complexities of their future activities. As a result of this transferability awareness, they might see the merit of getting experience in a wider range of personal attributes and working conditions so that they could prepare themselves for greater transferability, greater value, and greater likelihood of promotion.

To illustrate this need for direct training on transferability, I use the example of an Army Engineering Training Program, which trained Army engineers to build a bridge across a stream flowing into the large river nearby. Later, when these engineers went into action in war settings, they were able to build an appropriate bridge as long as the stream was as narrow or narrower than the stream where they were trained. However, many were unable to build a bridge across a wider stream.***

***Readers might want to be informed of the Project on the Vocational Preparation of Gifted and Talented Students in Secondary and Post Secondary Education. Dr. Bruce G. Milne was the Project Director at the School of Education, University of South Dakota, Vermillion, South Dakota 57069. In a series of conferences across the country he gathered together leaders in vocational education, vocational counseling, and Gifted/Talented programs, plus consultants (including the present writer), to explore all aspects of the topic of the project.

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COMPETENCY-BASED VOCATIONAL EDUCATION, NEEDED RESEARCH

William C. Knaak

The "Competency-Based Education Movement", which has been described as "a bandwagon in search of a definition", appears to be here to stay. Competency-based vocational education (CBVE) has also received broad attention in the literature since 1970, but there appears to be a lack of commonality among authors in their use of expressions and terms associated with CBVE. For example, the definition of "participants" in CBVE ranges all the way from a typewriting teacher who has developed his/her first task or competency list to vocational-technical institutions which are totally competency-based, open entry, and which utilize personalized instruction. These extremes and the, no doubt, many levels of definition between them suggest three areas of possible basic research in CBVE:

(1) Research to obtain reasonable concensus as to the characteristics of CBVE (definitions and linguistics). A survey of knowledgeable persons is recommended.

(2) Development or refinement of an instrument which can be applied to vocational program(s) or to an entire institution to determine at what level the basic characteristics of CBVE are present. R & D could involve further exploratory work along the lines being developed by Keene State University in New Hampshire.

(3) Utilization of the instrument to determine the levels of CBVE present in vocational programs and institutions around the nation. Application of the instrument to on-going CBVE programs is recommended.

CBVE programming is frequently co-mingled with personalized instruction, individualized instruction, time-variable learning and mastery learning. Must it be? Research is needed to answer the following question:

(4) Can CBVE exist successfully if it is not associated with (a) personalized/individualized instruction?, (b) time-variable learning?, or (c) mastery learning? Opinion polls from successful and reasonably complete CBVE programs and institutions would be of value here.

The question of "why CBVE?" has not been adequately addressed. There are frequent references to "a bandwagon", "state mandates", "accountability", and "innovation", but little reference to it being a superior learning system. Is it?

At the 916 Vo-Tech Institute in Minnesota, a personalized competency-based program was originally initiated for educational management reasons. In that program,

1) Students are not required to repeat learning of skills and knowledge previously learned.

2) Handicapped and other students can obtain immediate access to instructional programs.

3) Handicapped students can complete the segments of an instructional program they are able to.

4) The building, instructional equipment, and instructional staff can be used more efficiently. There is job placement assistance for graduates.

5) Students with a wide range of entry-level skills can be accepted.

6) Instruction is available 24 hours per day for part-day students.

Later, the program was also defended for the following educational reasons:

1) The learner progresses at his/her own rate to master the instructional content.

2) More learners achieve mastery than is possible under group-centered instruction.

3) The learner builds confidence by succeeding in learning.

4) The students learn to help each other learn rather than to compete for grades.

5) Learners may speed up their learning.

6) The presentation of the content is consistent.

7) Students can learn according to their preferred learning style.

8) The efficiency of the instructor is increased.

9) The instructor performs as a manager of learning - - rather than as information giver.

Research is needed to ascertain:

(5) Are the reasons being given for introducing CBVE valid? Objective on-site research is needed to determine if claims have validity.

(6) What reasons would motivate vocational education administrators, vocational teachers and persons in state departments of education to implement CBVE? A survey approach is needed for this information.

(7) What is the current level of commitment to CBVE by: state departments of education, vocational administrators, and vocational teachers? Confidential surveys are needed.

Efforts have been made at the National Center for Research in Vocational Education at Ohio State University and elsewhere to identify competencies required for teachers to implement CBVE. However, methodology for how to teach these competencies is still elusive, as is the time for learning the competencies. Even more elusive is the time the teacher needs to implement CBVE. Estimates on preparation time for CBVE student learning system range from 1 development hour per four student instructional hours to 50 development hours for one student hour. Even the lowest estimate seems prohibitive. It has been reported that 75% of vocational teachers felt that they had less than three hours a month to develop, adapt or localize curriculum. Research is needed to determine:

(8) What was the development time commitment in successful CBVE programs? Variables: Programs developed from "scratch", adapted programs, etc. Existing on-going programs should be polled.

(9) What is the success of "adaptation models" (transfer programs from successful CBVE sites)? On-going adaptation models should be monitored. New well-controlled models should be tried and monitored.

(10) What transfer techniques work well (from successful CBVE transfer sites)? and what works less well? This is a variation from (9) above.

CBVE is claimed to have some advantages over traditional instruction in the training of handicapped, disadvantaged, and for encouraging sex equity in programs. If true, CBVE could have a strong impact in implementing the objectives of federal legislation. Research is needed to:

(11) Test the validity of claims about utilizing CBVE to improve the training of persons who are handicapped, disadvantaged or taking training courses traditional for one sex. On-going sites should be studied to see if delivery services to handicapped persons are improved with CBVE.

Cost data about CBVE are almost nil. Research is needed to:

(12) Define start-up costs on a per instructional hour basis and to compare these costs to start-up costs in a traditional program. This implies studying new and on-going programs on-site.

(13) Test cost advantages/disadvantages as compared to traditional instruction in on-going instructional programs. Same as (12) above.

Little is known about "predictors" of individual student success in CBVE programs. Research is needed to:

(14) Determine if there are any "predictors" of probable student success in a CBVE program such as past experiences, standarized tests, cognitive style mapping, etc; and,

(15) Determine if there are remedies which can be utilized with students of low probable success to improve that probability. Questions (14) and (15) imply institutional research at CBVE sites.

Where CBVE instruction has been personalized or individualized and used with a mastery learning approach, it is claimed that graduates taught in this manner tend to attain accelerated advancement on the job because of having learned "how to learn". Research is needed to:

(16) Test the validity of CBVE "advantages" to students after they are employed. This could be an add-on to existing follow-up studies.

A major thrust for attempting to implement CBVE throughout the country has been made by state departments of education and teacher training colleges and universities encouraging vocational teachers to implement CBVE programs in their schools and institutes. Research is needed to:

(17) Determine which approaches have been most successful in implementing CBVE. A national survey would be in order.

Some state departments of education have decided that horizontal and vertical articulation of vocational programs can be accomplished most effectively if competency-based programs are established first. Research is needed to:

(18) Ascertain the impact of CBVE on the articulation of vocational instruction. Same as (17) above.

There does not seem to be much data available on student opinion of CBVE. Research is needed to:

(19) Determine student attitudes toward a CBVE system of instruction; pre and post-test. (This would require institutional on-site research.)

(20) Determine helps/hindrances to students in CBVE system.

Most CBVE instructional development starts with obtaining some types of task or competency list. This is followed by the writing of terminal performance objectives and standards for those objectives. Increasingly, previously developed lists are being made available for adaptation by others. Research is needed to answer the following questions:

(21) Is it possible to have a national task list with standards for an occupation (i.e. Auto Mechanics)?

(22) If national standards can be developed, will this lead to a national curriculum? Is this desirable?

(23) Are there advantages/disadvantages to the various models of CBVE now being used in different parts of the country?

(24) How are CBVE learning materials now kept updated; and,

(25) Is this possible with a national curriculum? Questions (21-25) above could be researched with opinion polling of persons familiar with CBVE.

Need Area: Data Collection and Evaluation

Joseph F. Malinski Director, Planning Development, Research and Evaluation Suburban Hennepin County Area Vocational Technical Centers Minneapolis, Minnesota	Data Collection in Vocational Education
Jeffrey A. Windom Director Ohio Occupational Information Coordinating Committee Columbus, Ohio	Data Needs: Supply of Skilled Workers
John D. Skinkle, Katy Greenwood Assistant Professors Interdisciplinary Education Texas A&M University College Station, Texas	The Federal Role in Improving Evaluation Strategies for Vocational Education
John A. Klit Manager Program Approval and Evaluation Department of Adult, Vocational and Technical Education Springfield, Illinois	Vocational Education Evaluation

DATA COLLECTION IN VOCATIONAL EDUCATION

Joseph F. Malinski

The term "data collection," as used here, involves all the activities associated with the identification, definition, classification, recording and reporting on, about, or in vocational ecucation. Data collection processes span word of mouth transmission to complex automated information storage and retrieval.

In my opinion, research and development in vocational education and all of education for that matter, have concentrated to a large measure on the research report or dissertation model of data collection and analysis. The continuing use of this model has hindered the development of real time information systems as tools for research. Another impediment to the use of real time information systems in education can be described as the "compliance mentality" associated with reports directed upward in the system; very often requested reports had little relevance or utility within the unit being queried. A final hindrance is the tendency to develop data collection efforts for policy making, institutional planning, operational control, and evaluation of all types. To use the vernacular, the main thrust of research and development activities in vocational education is to figure out "how to get our act together."

In its report on the hearings for the Educational Amendments of 1976, the House Committee on Education and Labor reported in the section titled "Administrative Improvements."

> The Committee believes that increased Federal funding will lead to more and better vocational courses. But simply putting more dollars into vocational education is not the sole answer to the question of how to achieve the best vocational education programs possible.
>
> There must also be major improvements made in the way in which the program is now administered by the U.S. Office of Education and by the States. Testimony before the Committee showed that these improvements must come in the areas of planning, accountability, data collection and use, and evaluation and follow-up.*

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* The Vocational Education and National Institute of Education Amendments of 1976. Reports No. 94-1085, 94th Congress, 2d Session. Page 16.

This legislative activity resulted in Section 161a of the 1976 Act which requires the development of a national educational data reporting and accounting system. Therefore, the Education Amendments of 1976 provides a mandate for the development of a National Vocational Educational Information System. This mandate is the first time that a national system including all states and territories in the nation has ever been attempted. The importance, scope, and magnitude of this national effort will have a significant and lasting effect on vocational education and the national economy. The design, development and implementation of the system will provide many opportunities for research and development activities in data collection, processing and reporting.

Section 161b addresses the need to relate the process data identified in 161a to labor demand.

The development process of the national vocational education data and accounting system can be divided into the following segments.

1. The development of a conceptual model.
2. The identification and definition of the data elements required for the system.
3. The establishment of an accounting system and structure.
4. The development of the operational process and procedures for data collection and storage.
5. The design and development of the reporting capabilities of the system.
6. The evaluation of the effectiveness of the system.
7. The improvements and/or enhancements to the system.

A Concept of a Uniform Accounting Structure

Figure 1 represents a conceptual presentation of the record-keeping (accounting) system suggested by Public Law 94-482 and related acts. Inasmuch as the primary focus is on vocational education's effect on student performance, the implementation of the model will need to be concentrated at the local level.

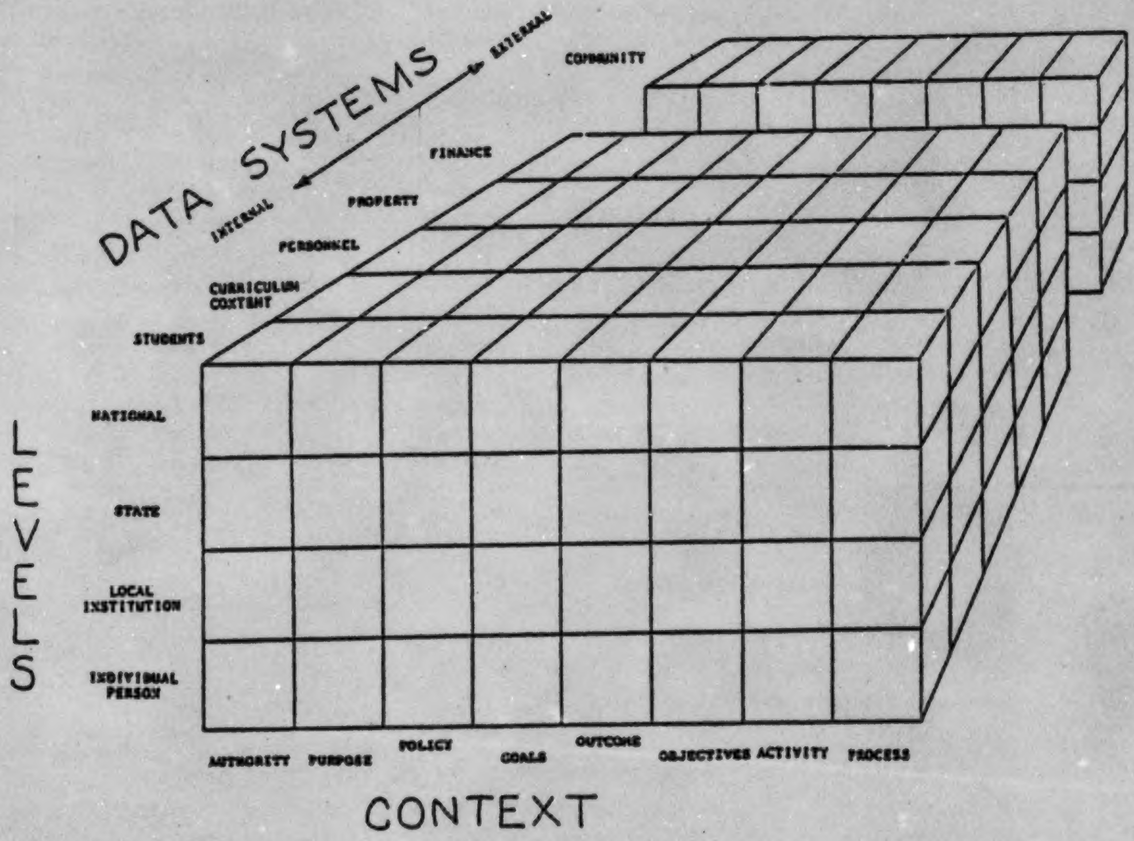
DATA SYSTEMS
EXTERNAL
INTERNAL
COMMUNITY
FINANCE
PROPERTY
PERSONNEL
CURRICULUM CONTENT
STUDENTS
LEVELS
NATIONAL
STATE
LOCAL INSTITUTION
INDIVIDUAL PERSON
AUTHORITY
PURPOSE
POLICY
GOALS
OUTCOME
OBJECTIVES
ACTIVITY
PROCESS
CONTEXT

Figure 1. Schematic model of data required by Educational Amendments of 1976 *

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* From paper prepared by William A. White and Joseph F. Malinski for the Vocational Education Task Force Data Acquisition Subcommittee, CEIS Annual Meeting, Washington, D.C. April 18-21, 1977.

The Education Amendments of 1976 represent a watershed data collection effort. Sections 112, 161 and 523 - among others - focus on the need for identifying, defining, classifying, recording and reporting uniform data about students, programs, program completers and leavers, staff, facilities, and expenditures. The extensiveness of the efforts required to meet the mandates of the legislation will necessitate a well-formulated, highly-structured accounting and reporting system to meet the needs and demands of individuals, local administrators, state agencies and federal agencies. This legislation also requires data linkages with special education, vocational rehabilitation, CETA and general education.

Requirements of a Logical Construct

To comply with legislative requirements it will be essential to engage in significant changes relative to the information gathering, organization, operation, and administration of the education system at the specific levels of program implementation -- individual, local institution, state agency, and federal agency. A data base will have to be developed which is complete -- in terms of accounting and reporting requirements -- and which has the capability to generate analytical reports actually aiding in decision making and policy formulation rather than simply providing collated data and status information. In addition, it will be necessary that the data base be generated for analysis in such a format and sufficiently accessible that updating the informational files can be accomplished at regular intervals. (At the local level it would be preferable that it be possible to do this continuously.)

Accomplishing this will require a logical construct developed through a model which is comprised of integrated data sub-systems with student, personnel, curriculum, finance, property, and community information. The modularity of data between sub-systems will be critical because it must be possible to generate output using data across two or more of the sub-systems when informational needs demand this capability. For instance, information needed to make decisions about specific aspects of the education enterprise (e.g., students, personnel, etc.) at the individual or any of the three governmental levels (local, state, or federal) will be a function of the educational context within which the decision is to be made (e.g., policy, goals, process, etc.). Therefore, the actual control and utilization of data will be a function of the ability of the accounting and reporting system to interface data elements across data sub-systems at a given level of educational operation and within a given educational context.

Figure 2 presents a display of a conceptual organization of the manner in which information about a particular program can be organized for access for different levels and purposes.

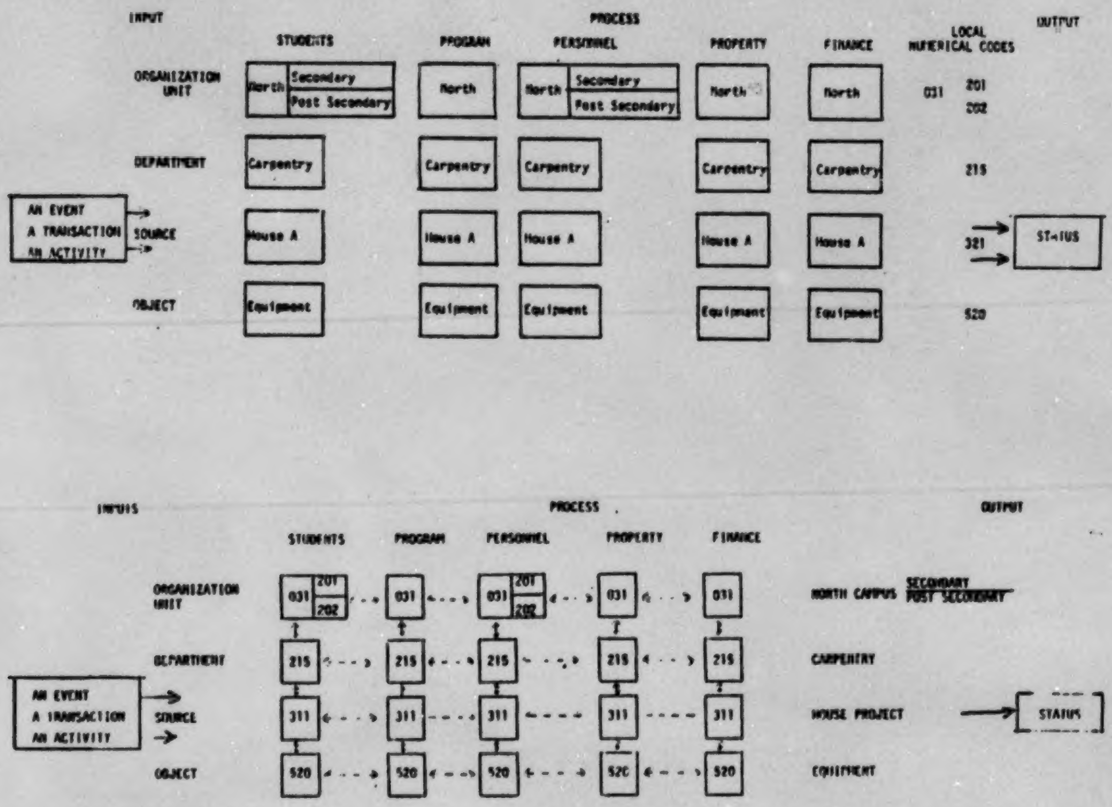
INPUT
PROCESS
OUTPUT
STUDENTS
PROGRAM
PERSONNEL
PROPERTY
FINANCE
LOCAL NUMERICAL CODES
ORGANIZATION UNIT
North
Secondary
Post Secondary
031
201
202
DEPARTMENT
Carpentry
215
AN EVENT
A TRANSACTION
AN ACTIVITY
SOURCE
House A
321
STATUS
OBJECT
Equipment
520
INPUTS
PROCESS
OUTPUT
STUDENTS
PROGRAM
PERSONNEL
PROPERTY
FINANCE
ORGANIZATION UNIT
031
201
202
DEPARTMENT
215
AN EVENT
A TRANSACTION
AN ACTIVITY
SOURCE
311
OBJECT
520
NORTH CAMPUS
SECONDARY
POST SECONDARY
CARPENTRY
HOUSE PROJECT
EQUIPMENT
STATUS

Figure 2. Organization of an integrated data base for local management purposes. (File structure used in Joint Independent School Districts No. 287, Hennepin Technical Centers, 1820 North Xenium Lane, Minneapolis, Minnesota.)

Many people within vocational education are involved in the production, recording, reporting or utilization of data and information. The scope and complexity of vocational education require a comprehensive, integrated information system.

The system contains the following characteristics:

1. It is made up of six major sub-systems: Students, Programs, Personnel, Property, Finance, Community.

2. It establishes standardized data definitions.

3. It structures the data accounting functions within each sub-system to enhance the reporting capabilities of the system.

4. It provides an improved method for data assembly, input preparation, verification, validation, and reporting resulting in the more efficient production of accurate and more clearly defined information.

5. It utilizes an integrated data base that makes possible the correlations of information among sub-systems and organizational units.

Figures 3 and 4 illustrate the interactive and reporting capabilities of the system.

The complete installation and effective use of an information system has the following conditions and requirements.

1. It requires that those persons having operational administrative or managerial responsiblity within vocational education understand and fully utilize the system with its present capabilities and assist in the further development and improvement of it.

2. It identifies and describes types of operational and management reports which will be available to document the vocational education performance.

   (Figure 5 illustrates the conceptual scope of management reports.)

3. It outlines the major activity areas involving the many producers and users of information within and outside vocational education, showing the specific data items to be recorded or reported, the person or persons responsible, date, time and sequencing requirements, and relationship to other systems or sub-systems. The overall implementation requires a major effort by the National Center for Educational Statistics, BOAE, state departments of education, local educational agencies and many other national, state and local organizations, both public and private.

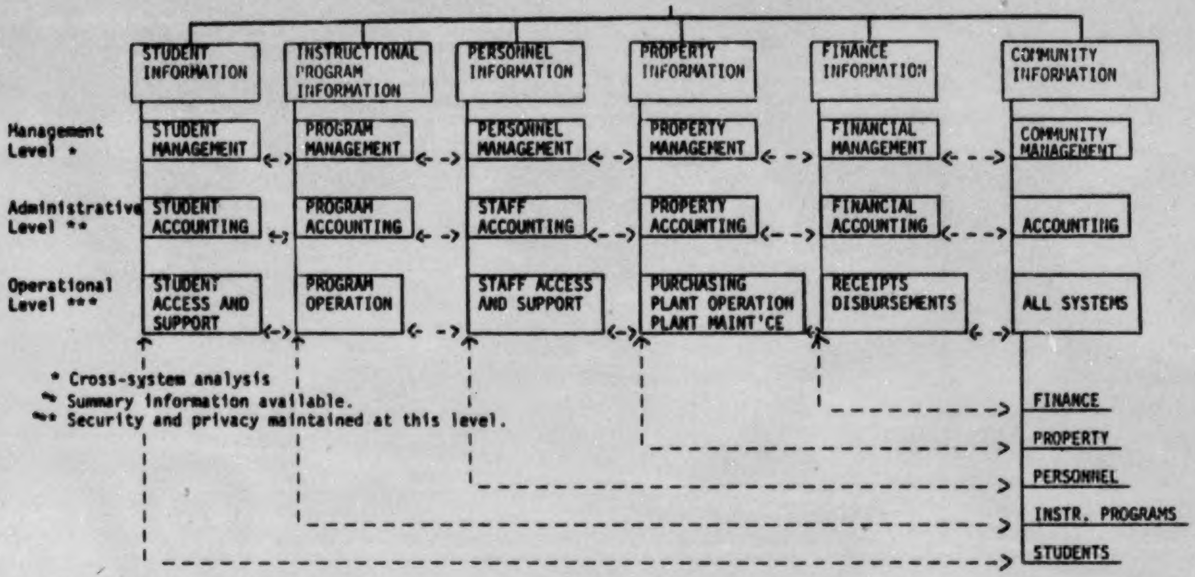
STUDENT INFORMATION
INSTRUCTIONAL PROGRAM INFORMATION
PERSONNEL INFORMATION
PROPERTY INFORMATION
FINANCE INFORMATION
COMMUNITY INFORMATION
Management Level *
Administrative Level **
Operational Level ***
STUDENT MANAGEMENT
PROGRAM MANAGEMENT
PERSONNEL MANAGEMENT
PROPERTY MANAGEMENT
FINANCIAL MANAGEMENT
COMMUNITY MANAGEMENT
STUDENT ACCOUNTING
PROGRAM ACCOUNTING
STAFF ACCOUNTING
PROPERTY ACCOUNTING
FINANCIAL ACCOUNTING
ACCOUNTING
STUDENT ACCESS AND SUPPORT
PROGRAM OPERATION
STAFF ACCESS AND SUPPORT
PURCHASING PLANT OPERATION PLANT MAINT'CE
RECEIPTS DISBURSEMENTS
ALL SYSTEMS
FINANCE
PROPERTY
PERSONNEL
INSTR. PROGRAMS
STUDENTS
* Cross-system analysis
** Summary information available.
*** Security and privacy maintained at this level.

Figure 3. Interactions of sub-systems

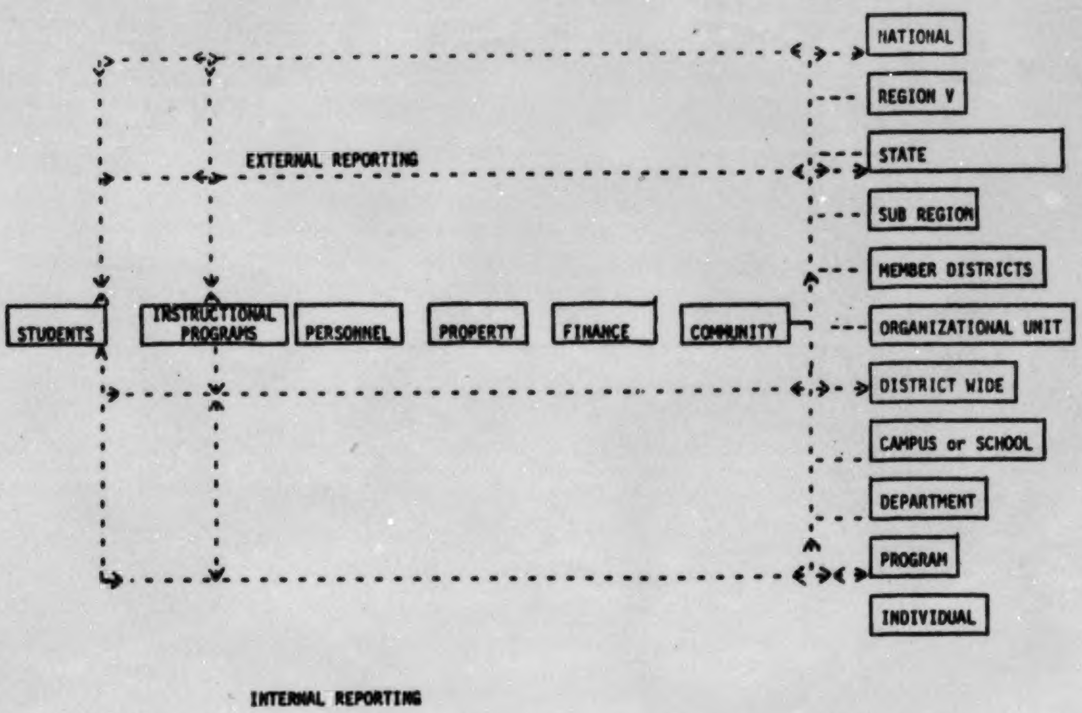
EXTERNAL REPORTING
STUDENTS
INSTRUCTIONAL PROGRAMS
PERSONNEL
PROPERTY
FINANCE
COMMUNITY
NATIONAL
REGION V
STATE
SUB REGION
MEMBER DISTRICTS
ORGANIZATIONAL UNIT
DISTRICT WIDE
CAMPUS or SCHOOL
DEPARTMENT
PROGRAM
INDIVIDUAL
INTERNAL REPORTING

Figure 4. Reporting capabilities of the system

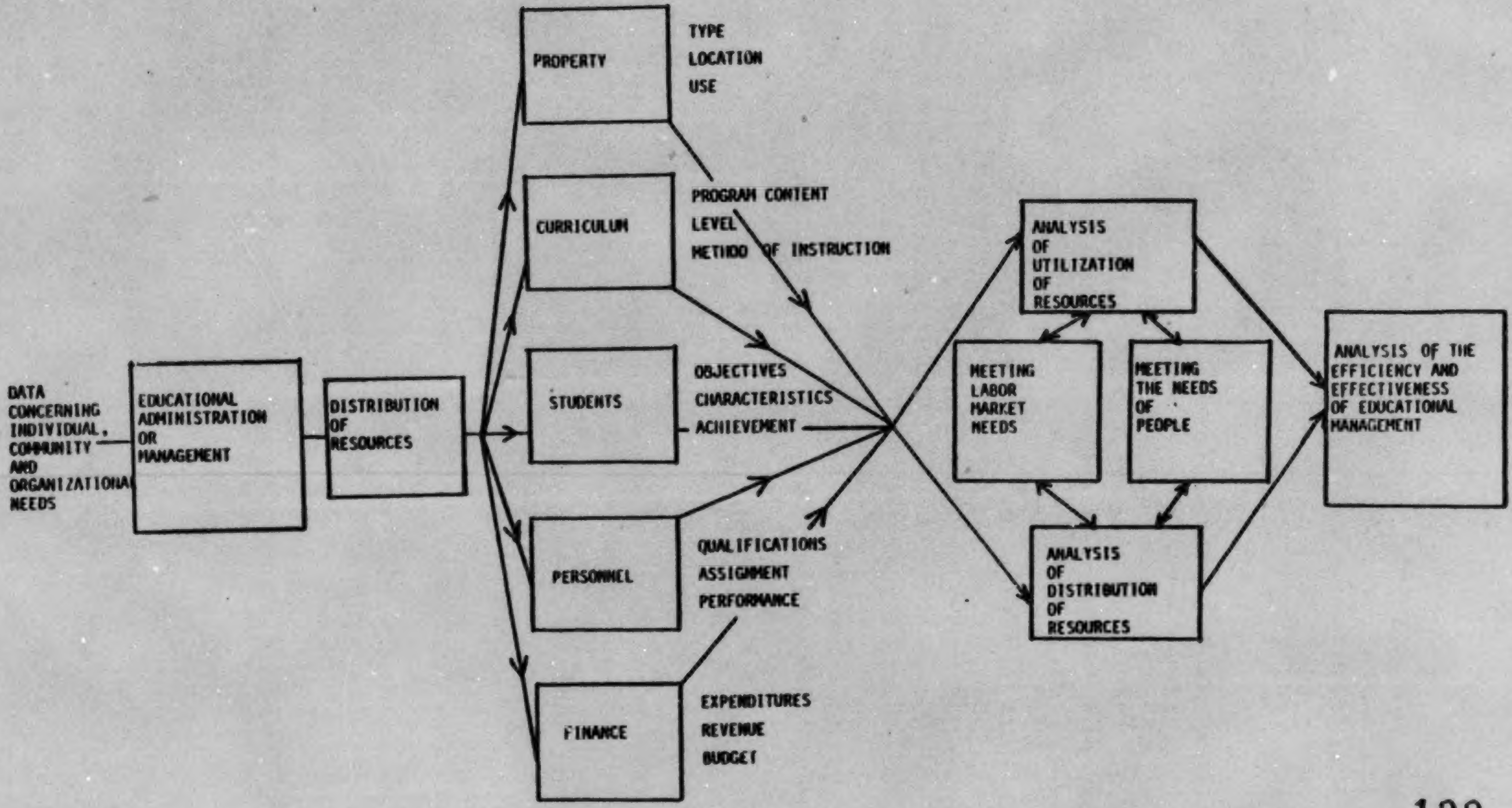
DATA
CONCERNING
INDIVIDUAL,
COMMUNITY
AND
ORGANIZATIONAL
NEEDS
EDUCATIONAL
ADMINISTRATION
OR
MANAGEMENT
DISTRIBUTION
OF
RESOURCES
PROPERTY
TYPE
LOCATION
USE
CURRICULUM
PROGRAM CONTENT
LEVEL
METHOD OF INSTRUCTION
STUDENTS
OBJECTIVES
CHARACTERISTICS
ACHIEVEMENT
PERSONNEL
QUALIFICATIONS
ASSIGNMENT
PERFORMANCE
FINANCE
EXPENDITURES
REVENUE
BUDGET
ANALYSIS
OF
UTILIZATION
OF
RESOURCES
MEETING
LABOR
MARKET
NEEDS
MEETING
THE NEEDS
OF
PEOPLE
ANALYSIS
OF
DISTRIBUTION
OF
RESOURCES
ANALYSIS OF THE
EFFICIENCY AND
EFFECTIVENESS
OF EDUCATIONAL
MANAGEMENT

Figure 5. A conceptual scope of management reports

4. It requires identification of the processes and procedures to be included in the integrated information system. This activity will require the analysis and evaluation of current procedures and restructuring and reordering of them where necessary.

5. It requires the development of a plan to disseminate effective utilization techniques to the information system for the management of vocational education.

6. It identifies costs necessary to design, develop, maintain, implement and improve the information system.

Management Information Systems

Certain propositions can be suggested for consideration in the development of research and development efforts in data collection and use to support a real time information system for vocational education. Nine are presented below.

1. Decision Making Information. There is a greater need for decision making information at the local level than at the state or federal level as more decisions (at least numerically) are or should be made locally. Furthermore, the information reported to the state and federal levels should bear some relationship to the information necessary at the local level. Requiring data whose sole use is for reporting to higher levels should be minimized.

2. Decentralized Capabilities. There is a difference between decision making information at the local, state, and federal levels. The level of detail necessary to make decisions or evaluate previous decisions is naturally much more detailed within or between departments and within or between school districts than need be reported to the state.

3. Modularity of Data. As reporting is simply a summation of a large number of individual characteristics, statuses, events or transactions, it is important that each contain adequate information that can be related to more than one activity.

4. Standards of Uniformity. There is a need to define each data element at each level in terms meaningful to the individual providing the data. As the operations and program characteristics of vocational education change, the data collection and analysis system must reflect those changes.

5. Basis of Accounting. The objectives of an accounting system are to relate the inputs and outputs for an accounting period and the current status of the program service or activity with a reasonable amount of accuracy. The rules established should also present fair and comparable analyses.

6. Involvement. There is a need to actively involve those affected by or having an interest in data collection activities, both providers and users of data. Following this, greater understanding of the need to integrate and consolidate data collection efforts could be achieved.

7. Organization of Data for Cross-Functional Analysis (THE CRITICAL PROPOSITION).There is a greater need for the correlation of data and information across the identified sub-systems. e.g. Student sub-system to Finance sub-system; Student sub-system to Finance sub-system to Personnel sub-system; Finance sub-system to Property sub-system to Curriculum sub-system. By linking the various sub-systems it would be possible to identify the resources of personnel, property, and finance used by a student to achieve a measurable amount of learning within a specific time frame. There is a need to set the same parameters of timeframe definition and structure for all of the information sub-systems.

8. The Report-Back Capabilities. The output of one level or function within the information system serves as the input to another level or function. There is a need for input level verification and validation of data and, where data are collected at the state level, from a large number of uniformly defined organizational units (districts, institutions, schools, programs, classes, individual students). The collecting organization has the capability to report back meaningful comparison analysis to the data-providing informational unit.

9. Changing Nature of Data Collection Needs Within the System (Flexibility). Changing legislation and funding patterns, changing programs and organizational structure within and among educational agencies, shifting population and employment patterns, and other constantly changing needs present data collection and reporting difficulties for vocational education. Structuring data collection efforts separately for each new need should be minimized.

The process of implementing these proposals in whole or part will of necessity need to be evolutionary in nature and will require the continuous involvement of the research and development community.

Vocational Education Data/Information Problems and Issues

Problems are identified in four major areas including coordination and comprehensiveness; goal and policy formation, monitoring and evaluation; involvement in vocational education data collection; and the changing nature of the system. Flowing from each of these problem areas are a series of issues which must be addressed in establishing alternative structures for dealing with research and development activities concerned with data and information; the major issues are listed under the relevant problems or areas:

Coordination and Comprehensiveness

1. Can a single coordinated structure, at whatever level, meet the data collection needs of all the constituents and clients to be served? If so, how? If not, why not?

2. What mechanisms can be developed at the local, regional, state and/or federal planning levels to influence and deal with the federal and state data collection programs?

3. How can private, semi-private and special purpose data collection and activities be further or increasingly related to the public data collection process? How?

4. How can resources for vocational education data collection, functions and activities be allocated in a comprehensive fashion to meet priority needs and equity considerations of various geographic areas?

5. How can data collection overlaps, duplications, and gaps in services be detected and managed? What is the appropriate data collection mechanism for comprehensive coordination of services and programs?

6. How can services and facilities be pooled or centralized to yield more comprehensive data needs and to decrease costs?

7. What inter-agency mechanisms are needed to coordinate vocational education data collection with other critically related data collection areas?

Goal and Policy Planning, Monitoring and Evaluation

1. Should goal and policy development be coordinated at the local, regional, state or federal level? Is the existing mechanism at the federal level sufficient for coordination? If not, what is an appropriate mechanism? Can separate local policies, goals, and priorities be reconciled into a comprehensive set of priorities? How?

2. What is an appropriate mechanism for identifying the unmet needs? For identifying future needs? For recommending new data collection components and policies to meet these needs?

3. How should capabilities for monitoring and evaluation of vocational education data collection and services be improved? Can performance indicators for each of the major functions of data collection be identified? What mechanism can put the improved capability to use so that monitoring and evaluation is made comprehensive and continuous? How can monitoring and evaluation be related to resource allocation so that ineffective data collection areas are identified and dropped?

Involvement in Vocational Education Data Collection

1. How can student and employer representation be increased in all vocational education data collection activities?

2. How can a planning structure be developed to prepare parents, students and teachers and provide them necessary information for a greatly expanded role in vocational education data collection and decision making process?

3. What is an appropriate means to identify problem areas needing further study? Is there one or are there several agencies better equipped to perform these studies?

4. How can existing data, information, and special studies be gathered in useful form and disseminated to all persons and agencies that may be able to use it? What mechanisms can insure that it is utilized by all those developing policies and making funding decisions for vocational education data collection?

The Changing Nature of the System and the Needs to be Met

1. How can changing needs for vocational education data collection services be addressed? How can the range of the mix of school preparation and on-the-job, in-service training be documented? How can the shifts in employment concentration and skill content be addressed?

2. How can a decentralized and representative data information process exist within a structure for resource allocation in which decisions are concentrated with state and/or federal officials? What mechanism is appropriate to monitor the process?

The problems and issues listed above should provide a base for the development of specific research and development activities, and the following suggestions list certain methods of research which might profitably be used:

1. Joint investigations (consortia) of students, teachers and administrators in schools or school systems and researchers based in universities, state departments of education, the U.S. Office of Education, and/or other outside organizations.

2. Research synthesis and conceptual development in advance of preparation of project memoranda.

3. Longitudinal studies of organizations' dynamics, of the relations between stimuli and vocational education organizations' responses to them.

4. Exploration of different metaphors, such as production process control and market analysis, as the analytic frameworks.

5. Historical studies to find out how features of vocational education programs have evolved; e.g., how roles of vocational educators as data collectors have changed or how criteria for evaluating vocational education's performances have shifted.

6. Investigations using media, such as video tape, audio tape and film as research tools for data collection.

7. Re-analysis of existing data using novel concepts rather than collecting new data.

8. Investigations as to the most effective curriculum and methods of preparing teachers, local and state administrators and others to use data and information for decision making.

DATA NEEDS: SUPPLY OF SKILLED WORKERS

Jeffrey A. Windom

One of the most difficult problems confronting vocational educators is the requirement that there be a demonstrated labor market need for the students they train. The problems of producing valid projections of labor market demand have been demonstrated many times. Equally difficult--but less thoroughly examined--are the problems of producing reliable estimates of labor market supply. That is, how many skilled workers are likely to be competing for the number of jobs expected to be available?

This paper raises research questions about some of the factors that influence the supply of skilled workers. The questions are organized into those related to occupational entry and those related to occupational mobility and separation. The questions proposed are not intended to be exhaustive but illustrative of feasible research with the potential for a good return on the funds invested.

Occupational Entry

What are the employment objectives of training program enrollees? When one attempts to estimate the supply of skilled manpower for a given occupation or set of occupations, there is a perennial problem associated with interpreting existing enrollments or completions data. The problem is that a significant but generally unknown proportion of program enrollees have already achieved entry into the target occupation of the program in which they are enrolled. In the short term, their goal is to improve their competency within their current occupation. In other cases, people who do not have employment objectives, enroll in occupational training programs for cultural or social reasons. As a consequence, it is generally unrealistic to take enrollments or completions data as a direct measure of potential supply to an occupation.

This problem does not haunt some data in which the linkage between the training program and the occupation are fairly clear; examples would include adult vocational education, apprenticeship programs, and medical schools (e.g., M. D. programs). In other cases, however, the problem is generally recognized to be significant, particularly with data on universities and technical colleges. What is more, the problem will likely worsen as postsecondary institutions increasingly solicit adult enrollments in response to shifting demographic patterns.

A partial solution would be to develop profiles of program enrollees. This would be only a partial solution, however, because student objectives do not always correspond with outcomes. However, these profiles, if used in conjunction with better follow-up data, would be useful. Since it would be burdensome to include student employment objectives in institutional reporting requirements, a preferable approach may be to conduct periodic sample surveys of students so that this important characteristic can be better described.

What is the relationship between participation in occupational training programs and entry into occupations? Although this question is not particularly difficult for vocational education, given current and proposed institutional reporting mechanisms, knowledge of the relationship is far less precise for other important training delivery institutions. This is notably so for universities and technical colleges.

Follow-up data on program enrollees are necessary to determine the flow of skilled manpower into occupations. In the absence of formal reporting requirements, data developed from voluntary follow-up surveys are useful. For instance, many technical colleges survey their graduates for institutional research purposes and willingly share their findings. The problem is that the data cannot be aggregated due to inconsistencies in occupational classifications, program taxonomies, and other reasons. It would be useful to develop and implement a standardized follow-up procedures for two-year technical colleges, for example. A pilot project in a discrete geographic area, for instance a state, would be a good first step. A recent proposal to these institutions in Ohio for a uniform, centrally administered follow-up study received nearly unanimous support.

What contribution do occupational education program dropouts make to the supply of skilled manpower? With current and proposed institutional reporting mechanisms for vocational education, this question is not as important as it is for some other sources of skilled supply, particularly technical colleges and universities. For instance, most people who enter colleges and universities never graduate. But even though they constitute a majority, their rate and pattern of skill development is not accounted for in the higher education data base in a systematic way.

Traditionally, college dropouts have entered what are now the target occupations of vocational and technical education. It is not now known whether the recent explosive growth of two-year technical colleges has created a flow of skills that is redundant or complementary to the traditional sources of supply for technician-level occupations.

There is some evidence that dropouts are having difficulty competing in the labor market without credentials or, perhaps, without adequate skills. A recent Ohio State University study found a substantial number of dropouts entering technical colleges or related programs, and a 1977 NCES study found nearly one-fourth of the enrollees in postsecondary proprietary schools were college dropouts.

A useful piece of research, then, would be a carefully designed follow-up study of program non-completers, particularly those from four- and two-year programs, to specify the flow into occupations and to contribute to the articulation of the education system.

What is the relationship between prevailing wages for occupations and labor force participation? The willingness of potential workers to enter an occupation is to a considerable but unknown extent a function of the prevailing wage rate for that occupation. A more precise specification of this relationship would be extremely useful in determining or estimating the supply of skilled manpower to occupations under various economic conditions. Put in simulation form, the trade-off position of training additional workers or adjusting wages could be established to asses optimal investment strategies.

As an illustration of a possible approach to the question, consider the following: Many areas of the country are now claiming a "shortage" of nurses. Wages are known to show considerable geographic variation for this occupation. Since nursing is a licensed occupation, there is comparatively good potential supply data available (generally, a nurse need not be employed to remain registered). Thus, using extant data, it may be possible for a researcher to describe empirically supply elasticity by measuring incremental changes in labor force participation while controlling for the size of the labor pool and employer requirements.

How have the increased educational attainments of workers influenced occupational supply? For most of the twentieth century workers have progressively increased their average level of educational attainment for most sets of occupations. At the same time job competencies and functions have also shifted to accommodate new technology and social preferences.

There is a general lack of understanding of the way that educational attainment relates to occupational qualification and performance. The theoretical base underlying this question is inconclusive. For instance, some economists feel that the supply of skilled workers influences the size and structure of employer requirements. Other economists, notably Thurow, hold that the structure of jobs in the economy is created first, and then employers enter the labor market in search of people to fill those jobs. If the latter is true, it is assured that employers will tend to hire workers with the best educational credentials, irrespective of whether those credentials enhance job performance. Indeed, there is mounting evidence that many workers are overeducated and that this leads to boredome, job dissatisfaction, and a lower quality of working life.

One of the major thrusts of affirmative action has been to require that a relationship be demonstrated between educational attainments and job performance. Unfortunately, most of the investigation has been technically flawed. The economist's traditional measure of performance has been "wages," but that measure has something circuitous about it or begs the question.

The recommended countermeasure is an investment in additional research relating educational attainment to job performance and satisfaction. There is presently little literature on studies using peer and supervisor review as the performance criteria, and additional work in the area could make a very important contribution in the determination of whether society's economic need for increasing educational attainments is real or imaginary. The preferred methodology, of course, is case study at the firm level. It should be noted that there is likely to be a very favorable cost/potential benefit ratio associated with such research.

Occupational Mobility and Separation

What is the relationship between employer-sponsored training and occupational mobility? It is known that American industry invests considerable resources to develop or improve the skills of workers in lower-through upper-level occupations. There are several important questions about this activity for which little information is currently available.

The proportion of training that is remedial in nature is not known. That is, must employers supplement basic education of the secondary school system? The amount of training that is firm-specific is now known. It would be useful to know the balance between training that is inclined toward firm orientation or indoctrination and that which leads to a bona fide occupational competency transportable to other firms competing in the labor market. Also unknown is the balance between training provided for occupational entry (trainee or unregistered apprenticeship programs) and that provided for upgrading within or between occupations. It would also be useful to know the extent to which firms contract with formal training institutions, the types of firms which are most inclined to provide training, and the occupations that receive the most attention.

While a few studies about employer-sponsored training have been completed, they really only scratch the surface. The preferred methodology for this type of research is establishment survey. The Bureau of Labor Statistics is currently involved in some related projects, but additional investments in carefully designed efforts would prove very helpful.

What are the career ladders and lattices associated with different entry-level occupations? When one attempts to measure and describe the supply of skilled manpower to most middle- and upper-level occupations, an important consideration is the flow of workers from lower- and entry-level occupations, which typically are related in some way. For instance, it is generally recognized that most automotive repair supervisors were once automotive mechanics. Many of the latter, in turn, were once mechanic's helpers. A person who transfers from occupation "A" to occupation "B" must be counted not only as an entrant to "B" but as a separation from "A" as well. This flow can be described by using a set of transfer or occupation mobility rates within the framework of a simple input/output matrix or Markov chain.

The most straightforward method of developing these transfer rates would be to examine the occupational status of the same workers at two or more points in time. Collection of such longitudinal data, however, is difficult and extremely expensive. The major existing longitudinal data bases, such as the National Longitudinal Surveys, do not have samples large enough to permit reliable estimates of transfer rate for discrete occupations. As a consequence, existing knowledge about career profiles is imprecise for most occupations. Better information would prove invaluable to occupational training program planners. Equally important, the process of evaluating career opportunities would be enhanced for the individual.

The clear alternative to longitudinal data is to use cross-sectional data to seek enlightenment on this important question. The 5 percent sample in the 1970 Census includes a question on the respondent's "occupation five years ago." Some preliminary investigation of these data has been done by the Bureau of Labor Statistics. The Bureau observed that nearly one-third of all workers who said they were employed in 1965 had changed occupations by 1970. Further, mobility levels varied by occupation, with the lower-level groups changing occupations much more frequently than the middle and upper-level groups. The principal limitation of the census data is that accurate estimates of net mobility (i.e., transfers in minus transfers out) for each occupation are difficult to develop. Nevertheless, some experts believe that additional information can be developed from these Census data, particularly if used in conjunction with matched samples from the Current Population Survey.

Another approach to the question would be to survey members of a given occupation(s), asking them to describe their career history. The responses could be assembled to develop career profiles and, if supplemented by findings from the Census data, would be very useful. The classic problem with this approach is the identification of a survey sample (i.e., where does one obtain a list of people who are, say, laboratory technicians?). It is recommended that potential studies in the area of occupational mobility not be overly ambitious, and instead focus on a limited number of occupations or occupational clusters. A well-designed pilot or demonstration project would be of great value.

How does the pattern of separation from occupations affect the needed supply of skilled manpower? An important fact often overlooked is that total projected job openings due to separation (death, retirement, disability, etc.) outnumber those due to growth by roughly three to one. While considerable attention has been paid to identifying growth occupations, there is a serious problem in the estimation of occupational separation which also warrents attention.

At present, the Bureau of Labor Statistics uses Current Population Survey data on labor force participation by age and sex to construct working life tables, which provide net labor force separation rates by age and sex for all workers. The Bureau applied these rates to census employment data, by occupation, age, and sex, to yield net labor force separation rates by occupation. The principal shortcoming of this procedure is that it does not evaluate occupational characteristics, which surely have a strong bearing on labor force separation patterns. For example, physicians may tend to persist in their occupation because of professional commitment, while assembly line workers may retire early because of boredom, and structural workers may exit from the labor force because of their tendency to fall from beams.

There is nothing conceptually mystifying about this question, yet a suitable methodology has yet to be developed. Existing data could probably be utilized, and the potential payoff of a good effort is substantial.

THE FEDERAL ROLE IN IMPROVING EVALUATION STRATEGIES FOR VOCATIONAL EDUCATION

John D. Skinkle and Katy Greenwood

Recent studies and their respective reports (including those of the General Accounting Office, Ellis, the National Association of Manufacturers, etc.) have documented the need for examining the barriers to, methodologies for, and utilization of various evaluation strategies within the field of vocational education. Because of the widespread problem nationally, U.S.O.E. should identify ways that national projects might assist the various states in responding to the need for more effective evaluation strategies. The following comments and recommendations for federal foci are organized according to themes, or concerns: (1) causes that have prevented the development of evaluation systems; (2) methods that have not yielded the necessary information needed for optimal decision-making; and (3) expanded utilization of evaluation capabilities. Potential solutions in the form of federally funded projects follow the identified problems.

Causes That Have Prevented the Development of Evaluation Systems

There is no hard evidence as to why the field of vocational education has fallen short in providing adequate evaluation strategies. Causes can only be conjectured, and therefore possibilities for alleviation of the causes are only speculative. However, it is clear that the federal mandate to "evaluate" had not been stimulus enough to provide adequate evaluation systems. The following problems and possible solutions are offered for consideration:

1. There has been inadequate orientation and formal preparation for state and local administrators regarding the value, uses, and methodologies of evaluation.

   Members of respective state staffs have operated within a strict compliance mode in terms of federal law. This meant that state personnel did not need to be skilled in planning and evaluation techniques. Consequently, there have been insufficient attempts to prepare state staffs to thoroughly understand the theory and practice of evaluation even though state and local governments had assumed major fiscal responsibility for the support of vocational education.

Federal Role: Therefore, it is suggested that a national project be designed and funded to provide personnel development for key, state staff persons at the same time new evaluation systems are being developed. A few states could serve as demonstration sites for different evaluation techniques. Respective task forces comprised of state staff persons would examine and try out different strategies in developing and operating various evaluation systems.

2. Members of State Boards for Vocational Education have not been properly oriented to the ways in which evaluation activities might enhance policy-development and decision-making.

   Federal Role: A national project might be initiated wherein various media approaches could be used in brief presentations, seminars, and/or workshops to familiarize key individuals with the purposes, value, and utilization of evaluation activities and results.

3. State legislatures have not been sufficiently convinced of the need to provide funds specifically for the evaluation of educational endeavors.

   Federal Role: Utilizing an approach similar to that mentioned above, attempts must made to familiarize state legislators with the purposes, value, and use of evaluation efforts in all education endeavors.

4. Prerequisites to evaluation, such as the development of goals and purposes of vocational education at state levels have been ambiguous and unexamined. These must be carefully reviewed, clarified, and legitimized in order for evaluation to be useful.

   Federal Role: A national project should examine the process for establishing goals for vocational education within the various states. Goals should be compared for diversity, comprehensiveness, and feasibility.

5. State-wide evaluations have been assumed to be too costly. The assumption has been that every program must be evaluated. Sampling techniques were not adequately explored.

Federal Role: Through the uses of case studies, sophisticated sampling strategies and/or other techniques, projects should examine the relative difference in approaches to evaluation versus costs involved.

6. No acceptable state-wide models have been developed for extensive use. There are some systems which only examine the secondary-level programs; others critique only the effects at the post-secondary level; still others review only certain program components. Some have dealt with process evaluation, others with product evaluation. Some states have developed follow-up systems while others have peer review as a singlar evaluation emphasis.

   Federal Role: Projects should be funded to establish demonstration projects within *key* states in order to ascertain feasible and effective ways for *conducting and utilizing comprehensive, state-wide* evaluations.

7. There has been resistance from regional accrediting agencies when various states have wanted to establish *state-wide* evaluations.

   Federal Role: A project should be undertaken that will examine the ways and means by which accreditation effects may be most effectively linked with state-wide evaluation efforts.

8. Key components, such as program standards, of state and local evaluation efforts have not been developed.

   Federal Role: The government needs to assist program areas to develop standards that can be used by states, accrediting agencies, and local schools to evaluate programs.

9. The *function* and *scope* of various agencies mandated to evaluate vocational education have not been clearly delineated. The state agencies, local schools, state advisory councils, the National Advisory Council, and others do not have a clear view of the role and boundaries of their function to evaluate.

   Federal Role: It is suggested that a project be initiated to conceptualize the substantive issues of vocational education evaluation. What are the role, scope, and function of such activities; what types of efforts should be undertaken by various groups and agencies?

10. Higher education institutions with graduate programs of vocational education have not given sufficient attention to strategies for evaluation, planning, and accountability. Practicums and new courses should be developed.

Federal Role: Working through a council of teacher educators, a state of the art paper focusing on evaluation and planning for vocational education could be developed. Subsequent competencies, instructional techniques and appropriate materials could be identified, developed and pilot-tested.

11. Planning and evaluation components within vocational education sections of state departments have not (sufficiently) linked their efforts with the central planning and evaluation unit at respective state agencies. (Perhaps more coordination would reap a more comprehensive, viable state-wide system.)

    Federal Role: Comparative projects should be initiated within state agencies to contrast an integrated versus isolated approach to vocational education evaluation.

12. There has been a lack of coordination between levels of vocational education which has prevented the establishment of viable evaluation systems. Members of higher education coordinating boards, state agencies, community college boards, adult education agencies, and manpower programs have not yet attempted to cooperate extensively in the development of a comprehensive, coordinated evaluation system linked to all vocational education endeavors.

    Federal Role: Demonstration projects might be funded to coordinate various cooperative efforts to link evaluation sub-systems between various levels and types of programs.

Lack of Information Needed for Decisions

1. Methodologies, strategies, and criteria used for making decisions based on evaluation efforts have often reflected archaic or unimaginative philosophies of vocational education. They have assumed placement on the job was sufficient evidence of program success.

   Federal Role: The states should be assisted in identifying additional criteria for determining the success of vocational programs. (Vocational education has too few observable and measurable indicators of success.)

2. Evaluation methods have generally focused on the process of providing vocational education within a local education agency. They have not directed attention to the evaluation of other agencies (e.g. manpower), effectiveness of state staff, etc.

Federal Role: Evaluation activities which include more than the traditional peer-group review must be explored. Different combinations of various techniques should be tried to determine effective and efficient schema for evaluating vocational education.

3. There has not been sufficient use of periodic, third-party evaluations as an integral component of a comprehensive evaluation system to provide an objectivity not otherwise available.

   Federal Role: The federal government should consider funding demonstration projects which would attempt to build such evaluations into the total comprehensive evaluation system. The final outcomes of these projects would be long-term and short-term evaluations using a wide variety of techniques which would expectedly be incorporated within the overall evaluation effort on a periodic (or continuous) basis. Such efforts will serve as a check-and-balance on the validity and objectivity of vocational education evaluations.

Expanded Utilization of Evaluation Capabilities

Distinct evaluation activities versus the development of evaluation systems.

In the past, evaluation efforts have typically been distinct activities associated with discrete times. There have been definitive beginning and ending points for the evaluations conducted. As a result, there have been two distinct consequences. First, most evaluations have been relatively short-term in nature; and second, they have not been linked to the continuing administrative aspects of the education systems. It is difficult, or impossible, to hypothesize and subsequently determine long-term effects of administrative and/or programmatic efforts via short-term evaluation. In addition, since evaluation is conducted to enhance and effect a rational decision-making process, evaluation efforts must be more than a composite of singular assessment activities. They must be integral elements of a comprehensive, structured and ongoing evaluation system which will enhance the administration of the education system in both its policy direction and its operational management. Also, evaluation systems must serve as the base from which to develop the rationale for and foci of vocational education renewal.

Therefore, one priority for the future funding of evaluation efforts might encompass the establishment of extensive, broad-based evaluation projects which would receive decremental allocations for financing the development of evaluation systems which will ultimately be self-supporting, continuous, and a base for future decision-making. Such an effort would require that the federal government assume the primary cost for development of evaluation systems (during the initial phases of the projects) with the state government assuming the cost of operating and utilizing the system (during the latter phases of the project contract). For instance, decremental funding of developmental projects might involve 80% federal funding the first year, 50% funding the second year, and 20% funding during the third year. The respective state(s) involved would provide additional state funding of 20%, 50%, and 80% for each of the respective years with additional funding of 100% for two more years. Not only would such a project reinforce the concept of "seed money" advocated by the federal government, it would require the state(s) to make a long-term commitment to evaluation which was specifically linked to the total programmatic vocational education effect within a state. Such an arrangement would increase the probability that evaluation would become an integral aspect of state and local administration which could be continued indefinitely, with or without major modification of the evaluation strategies, methodologies, and techniques employed. Evaluation activities of this type could also be used in other states as demonstration projects, which could be expanded, modified, and/or fused into existing evaluations systems wherever and whenever possible.

Meta-evaluations.

It is not unreasonable to assume that substantial progress has been made in the evaluation of vocational education; however, there is considerable instruction still needed to identify the optimal goals, methodologies, and strategies of evaluation. Presently, evaluation efforts are considered an important element within the educational enterprise. With considerable funding being made available for evaluation activities, it is expected that valid and useful information will be made available for purposes of decision-making.

Assuming that there have been some worthy evaluations conducted in the past, it may be appropriate to examine these efforts via meta-evaluations to determine strengths to possibly include in future activities. It may also be useful to identify weaknesses which may be off-set in the future. Basically, a meta-evaluation can be defined as an attempt to describe an evaluation activity and judge it against a conceptualization of what constitutes good evaluation practice.

Meta-evaluations can be used to address some of the more substantive issues associated with evaluation. Among others, meta-evaluations can assist in the assessment of the:

a. merit of previous evaluation efforts;

b. extent to which evaluations have facilitated (1) decision-making, and (2) compliance with requirements of accountability; and

c. evaluation objectives, the appropriateness and implementation of evaluation designs, and the worth of evaluation results.

Meta-evaluations can also be used to determine whether evaluation efforts are directly or indirectly linked to the improvements of operations such as policy development, administration, instruction, and research and development activities. Is evaluation being utilized for more than just explanation? Are evaluation activities being used for planning and decision-making? Evaluations of evaluation activities might contrast micro-versus macro-level evaluations but would probably not provide the systematic and aggregated data base necessary for contemporary educational leadership to make policy and planning decisions at the state and/or national level.

Therefore, one priority for future R & D funding might involve conducting second-order evaluations of three different levels of previously conducted evaluations: local, state, and federal. In addition, it might be feasible in certain instances to suggest secondary analyses of data which had been previously collected on major evaluation studies. Possibly the state of the art in vocational education evaluation and the expanded utilization of multivariate analysis techniques by professionals within the field have made it feasible to address new issues and questions with previously collected data. It might also be highly desirable to re-analyze data for the purpose of analyzing the original research questions posed for consideration.

VOCATIONAL EDUCATION EVALUATION

John A. Klit

Introduction

The utilization of formal evaluation procedures within vocational education is, at best, in its infancy. Since the 1976 Amendments, evaluation has received more emphasis than in the years after the 1963 Amendments. This has caused much concern and consternation among vocational educators. Our efforts can best be summarized by stating that we now recognize the need to conduct evaluation activities. We can understand the procedures by which such activities can occur but we have yet to recognize what to do with results of evaluations. This is evidenced by the number of evaluations that result in numerous answers to questions that never existed. We have not yet learned to utilize the product from conducting evaluation in program improvement, accountability or public relations purposes.

I have attempted to identify areas of needed research of developmental activity within the study of vocational education evaluation. The suggestions have been organized around the three areas of: a) concepts of evaluation; b) procedures for conducting evaluations; and c) the use of evaluation results. I have identified specific problems or concerns that exist within each of these categories and attempted to suggest needed research or developmental activities to overcome the problem or concern. The specific problems or concerns by category include:

A. Concepts of Evaluation
    1. Limited Foundation for Conducting Evaluation
    2. Cost Effectiveness of Various Evaluation Techniques
    3. Conceptual Model for Evaluation

B. Procedures for Conducting Evaluations
    1. Locally Directed Evaluation
    2. Involvement of Lay Citizens in Evaluation
    3. Assessment of Student Achievement

C. Use of Evaluation Results

   1. Integrating Evaluation Results

   2. Reporting Results

   3. Utilizing Evaluation Results for Public Relations

I will now present a more detailed discussion of each of these areas.

A. Concepts of Evaluation

1. Problem or Concern: Limited Foundation for Conducting Evaluation. Although the emphasis on evaluation is a recent concern to vocational educators, it has existed in other fields of study for many years. The theoretical foundation exists in these areas and should be drawn upon and applied to the evaluation of vocational programs. Instead of vocational evaluation meaning little more than follow-up studies on on-site visitations by teams of "experts," we feel that evaluations must result in quantifiable data.

   Suggested Research or Developmental Activities. Other fields of study such as economics, anthropology, law, journalism, medicine, and law enforcement have instituted "accepted" technologies of evaluation which would have substantial applicability to vocational education. From such fields could come improved methods of investigation, interpretation and reporting of results. We must then overcome our heavy reliance on quantifiable data which we have difficulty interpreting. Once various evaluation techniques had been gleaned from other disciplines, we would have to adapt and test them within vocational education.

2. Problem or Concern: Cost Effectiveness of Various Evaluation Techniques. We have not been able to equate the value of conducting various evaluation methods to costs incurred, both in terms of additional dollars expended and personnel time required.

   Suggested Research or Developmental Activities. With fewer staff and financial resources available for vocational education programs, cost-effective ways must be developed for directors to select the most appropriate evaluation techniques and to incorporate those techniques into their programs. Developing such methods would allow vocational educators to document both the costs and the expected outcomes of various evaluative techniques.

3. Problem or Concern: Conceptual Model for Evaluation. All too often various evaluative techniques are not incorporated into a total evaluation approach. In addition, the consolidation of evaluative information at various educational levels such as local education agencies, state education agencies and federal education agencies does not occur.

   Suggested Research of Developmental Activities. With some reservation, I suggest that available evaluation techniques be consolidated into a model, from which program personnel can easily ascertain the most effective evaluation procedure for their program. The model must also include the most effective methods of consolidating data and utilizing them at the local, state, and national levels. Such a model would permit vocational educators to develop evaluation systems that would provide them with sufficient data for decision making.

B. Procedures for Conducting Evaluations

1. Problem or Concern: Locally Directed Evaluation. The staff of most local education agencies are deficient in program evaluation techniques. They have neither the understanding nor the tools with which to complete evaluations and utilize the results in program improvements.

   Suggested Research or Developmental Activities. A comprehensive set of materials should be developed to aid local agency personnel in conducting their own program evaluations. This material should provide a rationale to staff for conducting a specific evaluation activity (such as cost outcome analysis), provide them with the suggested steps necessary to complete the activity, and provide them with suggested instruments to assist them in interpreting and utilizing the resulting information. This set of materials should complement the comprehensive model developed as a result of item A-3 above.

2. Problem or Concern: Involvement of Lay Citizens in Evaluation. Related to the locally directed evaluation activity included in item B-1 is a concern for the involvement of non-educators in the process of evaluation. Vocational educators have yet to harness the employment knowledge of the communities they serve.

   Suggested Research or Developmental Activity. We have isolated cases of successful involvement of lay citizens in the evaluation of vocational programs. New study should draw upon successful procedures and result in a handbook designed to provide educators with the guides and tools by which to gain this valuable input. This is not a research activity but instead a developmental activity which would have great utility in both pre-service and in-service education of vocational educators.

3. Problem and Concern: Assessment of Student Achievement. Vocational education evaluators are faced with a major problem when considering the mandate within P.L. 94-482 to assess vocational student achievement. Considering the state-of-art of vocational evaluation, the degree to which the mandate can and will be met is questionable. My opinion is that it cannot be met if we expect to be able to aggregate data from student achievement measurements either within states or across states by program area. Employment needs and curriculum content do and should vary from locale to locale. Standardization of curriculum content should not be forced through testing procedures.

   Suggested Research or Developmental Activity. Considerable work is needed to determine first the feasibility of the mandate assessing student achievement. Student achievement testing within other disciplines must be researched. The result should provide a desirable approach to meet this need within vocational education. This initial activity should be followed by a major developmental activity to provide vocational educators the tools by which student achievement can be assessed, tools which must be tested across several vocational program areas. These evaluation methods would play a major role when legislators determine the degree to which the mandates of the '76 Amendments were met; the project should also provide direction for the rewrite of the amendments that will occur prior to 1982.

C. Use of Evaluation Results

1. Problem or Concern: Integrating Evaluation Results. In vocational education evaluation we have not yet reached the point where we can analyze and utilize data coming from several evaluation techniques at the same time. As an illustration, we may conduct a student follow-up study but are unable at the same time to take account of student interest and achievement data. Were we able to develop such a system, we might be able to run evaluations more efficiently and economically. As an example, certain evaluations, such as cost outcome analyses within local education agencies, might more feasibly be conducted in a different department each year. Other sorts of evaluation might more effectively be run periodically rather than annually.

Suggested Research or Developmental Activity. The end product of this activity would be a handbook which would enable vocational planners to obtain optimum data for the decision-making process. For example, the data needs required by the Vocational Education Data System (VEDS) should become part of the total evaluation plan. Data from evaluation activities such as student and employer follow-up should first be utilized to improve the program and secondly to complete the VEDS forms. Such considerations as the maturity of a program and its data needs must be built into the resulting handbook.

2. Problem or Concern: Reporting Results. Considerable energy is expended conducting various evaluations but the results are never utilized in program decision-making efforts, often because final decision-makers do not know enough about vocational programs and are simply unable to utilize the evaluative data provided. Vocational educators have difficulty reporting data in a useable form.

   Suggested Research or Developmental Activity. Extensive study of data reporting techniques utilized outside vocational education would be beneficial to the field. Much could be learned from business and industry graphic formats for summarizing yearend data. In addition, the use of executive summaries would do much to improve the use of evaluative data.

   To accomplish this, we need to develop a handbook for reporting data to decision-makers. This would be a hands-on guide written for vocational educators, filled with reporting techniques.

3. Problem and Concern: Utilizing Evaluation Results for Public Relations. Currently evaluative data are not used for public relations purposes although vocational programs are urgently in need of data that can be used for this purpose. We can no longer assume that our publics can readily see the value of vocational education and will continue to support it.

   Suggested Research or Developmental Activity. We have used evaluative data for program planning and for accountability, but we should also consider such data as a public relations tool. Vocational educators need a handbook that can aid them in using evaluative data in this way. This handbook would include a compilation of tested methods for presenting data for public relations. The type of data and the data format most interesting to the public must be researched. When completed, the handbook should enable vocational educators to formulate a public relations plan that periodically presents data to the public served by the various programs offered.

SUMMARY

It is questionable how many separate studies exist within the list of suggested research or developmental activities. Many of the suggestions could be combined into one study, with separate handbooks resulting as aids for conducting various activities. As an example, the data utilization could logically be one study, with specific handbooks developed that demonstrate data use for program planning, accountability and public relations.

If I were to put a priority on research needs, I would say that our theoretical basis for conducting evaluation is in need of expansion. We are too quantifiably oriented at the present time. The problem with this attitude is that most quantifiable data are meaningless. As mentioned above, the other area of extreme importance is how to use evaluation results.

The concept of meta-evaluation must also be considered in whatever endeavors are undertaken. I did not include that as a specific problem or concern since it is a general concept that must be considered whenever any evaluation procedure is developed.

In addition, I feel that many of the suggested activities can have relatively fast turnaround time; I do not see a lot of two or three year research studies. I don't feel we can afford to wait that long.

In summary, I have identified the major areas of concern that I recognize with existing evaluation endeavors. Keep in mind that evaluation (other than student follow-up) is relatively new to vocational educators. We must develop materials that can be utilized by practicing vocational educators, as well as training programs for those entering the field.

Need Area: Planning

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Improving Vocational Education Planning at the Local Level

IMPROVING VOCATIONAL EDUCATION PLANNING AT THE LOCAL LEVEL

Allison L. Jackson

The major planning needs I see at the local level involve methods of improving the coordination among the various agencies and advising groups responsible for providing vocational training. In this paper I have attempted to outline what I consider the major research needed to improve planning at the local level. First I present a list of seven needs related to improved planning and then I present in tabular form eight specific research questions and suggest approaches for addressing these questions.

Needs in Local Planning

1. There is a need to increase coordination between local and county level advisory councils to develop and expand local vocational training. There has been a general failure of state, county and local advisory councils to coordinate needs assessment and planning activities to provide a comprehensive approach to the same constituencies. This failure has been recognized in the legislation and the Educational Amendments of 1976, the new CETA and Adult Education Acts require better planning.

2. There is a need to identify those diffusion tactics most favorable for the communication of validated local vocational planning. A series of studies conducted by Hull and Hester (1973, 1974, 1975) indicate the need for additional research on staff perceptions of diffusion tactics. There is an apparent failure to communicate and transport valid strategies from one program to another. (NIE, 1973-75)

3. There is a need to provide strategies for regionalization of vocational training services to a number of constituencies concerned with adult, postsecondary and experiental learning opportunities. There is an expanding need to articulate different relationships among health, human resources training, and traditional vocational institutions. In the past there has been little or no attempt to interrelate long-range master plans of LEA's, county units and institutions (e.g. community colleges) and state and federal training programs.

4. There is a need to develop a uniform data collection and analysis system for local level planning. The establishment of the National and State Occupational Information Coordinating Committees have caused thirty-four states

to initiate individual student cards for tracking and data purposes. This is clearly a failure to use technology properly.

5. There is a need to coordinated career education and vocational education planning at the local level. The new Career Incentive Act (PL 95-207) attempts to avoid the duplication of a data base in its requirements for statewide planning for career education. The interdependent nature of career and vocational education must be communicated at the local level to remove the "them" and "us" syndrome.

6. There is a need to supply industry with a better analysis of labor supply and demand data. This need has grown greater because administrators have not effectively utilized predictive and quantitative models for estimations.

7. There is a need to develop urban vocational administrative talent to work for local, state, and federal linkages to address the training deficiencies in the cities. While many reports have been written on this need, the elements of sexism and racism that may influence the deficiencies have not been addressed.

In Table I, I raise eight possible research questions that I think deserve highest priority in investigating the needs I have listed above. For each of the questions I raise, I attempt to sketch a research approach that could be directed to the question.

TABLE I: SUGGESTED RESEARCH QUESTIONS

QUESTION/RESEARCH PROBLEM	INSTRUMENTATION	TARGET POPULATION	ADMINISTRATIVE PROCEDURE
1. Each state has numerous manpower/vocational advisory groups operating for improving vocational training. Question: How to foster coordination of local advisory councils with the numerous state and regional bodies directing their efforts at human resources development?	1.1 HEW, Manpower Programs, inquiry sheets (1976). 1.2 Data Collection sheets which indicate the following: Formal Council Characteristics Functions, goals, structure, representatives Reported linkages to other advisory councils in vocational education 1.3 Survey of LEA Boards of Education "Performance in Planning" (see local vocational education planning guide Ohio State University, 1976). 1.4 "Opportunities for linkage", Technical Assistance and Training Corp., 1977.	1.1 A probability sample of all local vocational boards of education. 1.2 A random stratified sample of all local advisory board members in a state. Sample: (For N.J. the sample would include approximately 147 vocational board of education members and over 2,000 advisory board members.)	1.1 A telephone interviewing technique , paralleling the technique developed by Dr. Steven Salamore, Eagleton Institute of Politics, Rutger University. 1.2 - 1.4 Paper and pencil administration at (1) statewide vocational board meetings (2) through regional educational associations (REA's) and (3) at local board meetings
2. Staff perception of the effectiveness of local vocational planning activities is affected by district demographics. (The problem is how to measure and interpret staff perception of LEA advisory board planning activities, in the light of district demographics? A sub-problem is, do the demographics affect perception of effectiveness of LEA advisory boards?	2.1 Biographical Data Survey. 2.2 District Demographic Profiles from the SEA. 2.3 District Planning Activities Effectiveness Survey. 2.4 A multi-staged stratified cluster design (see National Science Foundation, Office of Program Investigation, March, 1978, National Survey Contract #C7619848).	2.1 Vocational Central Staffs, principals, and shop teachers.	2.1 Listing the breakdown of the state by Primary Planning Units, it would be easy to classify vocational school districts by demographics and compare staff perceptions of effectiveness of LEA advisory board planning activities.

TABLE I: (continued)

QUESTION/RESEARCH PROBLEM	INSTRUMENTATION	TARGET POPULATION	ADMINISTRATIVE PROCEDURE
3. What regional patterns in local vocational planning materials usage are evident? Local level (vocational) advisory	3.1 Using the Northeast Curriculum Network as an example, all SEA, REA, and LEA library, media, and planning supervisory staff could be surveyed as to material effectiveness and use.	3.1 Professional staff responsible for the dissemination of planning materials to LEA's.	3.1 Through the National Curriculum Network, a random sample of professional staff could be pulled to respond to several elements of this question mainly: . materials useage . comparison of materials requested . application of strategies
4. What are the roles of the superintendents and local vocational board presidents in the application of validated planning practices for local AVTS?	4.1 Variables Structure and Organization of LEA (vocational structure) Type of Professional Staff Organization	4.1 All vocational superintendents.	4.1 Through local associations of superintendents administer instruments.
	4.2 An instrument can be designed which incorporates the basic planning practices needed to pursue a comprehensive planning process. (Using the "Generic Planning Model" as a guide.		
5. What are the competencies needed by local advisory group members and non-vocational school administrators to plan in a coordinated manner with local vocational administrators for the advancement of occupational programs?	5.1 Administrators Performance Assessment form designed by Dr. Robert Norton, Ohio State University (Performance Based Curricula Program, 1976).	5.1 Comprehensive school superintendents, board of education members.	See Dr. Robert Norton's Performance Based Curricula Program, 1976.

TABLE I: (continued)

QUESTION/RESEARCH PROBLEM	INSTRUMENTATION	TARGET POPULATION	ADMINISTRATIVE PROCEDURE
6. What are the Characteristics of vocational teachers who display innovative behaviors in regard to local level planning?	See Measurement of the Change Orientation of Vocational Teachers by Earl B. Russell, Ohio State University, December, 1972, pages 51 and 52. (Dr. Russell's research can lead to further problem analysis for vocational planning at the local level)		
7. What are the skills needed by local level professional staff in vocational education to produce an effective placement service?	Student Planning Questionnaire (See Dr. Robert Norton's Student Placement Service Study, 1977, pages 17-20. Review the entire packet for further instrumentation.	Identified in Norton Study.	Identified in Norton Study.
8. What are the training needs for parents and community members involved in vocational education?	Contact USOE, Office of Community Education for Instrumentation, Design of Study, and Administrative Procedures.		

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Need Area: Transition from School to Work

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NOTES ON TRANSITION FROM SCHOOL TO WORK

Harry F. Silberman

These notes assume a reader familiarity with the three volumes prepared by Paul Barton and Bryna Fraser (1978) on the topic, "transition of students from school to work," entitled Between Two Worlds: Youth Transition from School to Work, a report organized into six elements: (1) developing a research networking capability, (2) developing school-work transition indicators, (3) knowledge integration and synthesis, (4) program evaluation, (5) program experimentation, and (6) survey research. Most of the ideas I can think of are contained therein and I will not repeat those ideas here.

A few years ago, Research for Better Schools, Inc. identified four central issues in an attempt to focus on key research topics concerning the transition of youth to adulthood: (1) youth unemployment, (2) youth segregation, (3) declining family structure, and (4) youth sociopathy.

Another research agenda was prepared by Steve Heyneman and William Daniels (1976) for the Assistant Secretary for Planning and Evaluation, DHEW. They concluded two research themes deserved top priority attention: (1) youth rights and obligations, e.g., right to learn and the obligation to permit others that right, and right to family planning irrespective of family opinion; and (2) sense of community, e.g., how the notion of community works in families and larger groups to preserve social cohesion.

Lois-ellin Datta and Corinne Rieder have placed their highest research priority in three areas: (1) studies of measurement, (2) studies of implementation, and (3) long-term follow-up. They feel these three emphases will offer the chance for three traditions to come together: (1) research concerned with socialization and adolescent development; (2) research concerned with the teaching/learning process in the home, the school, the community, and the workplace; and (3) research concerned with how structural changes in schools and the workplace develop and evolve. See the NIE Fourth Annual Report of the National Council on Educational Research for further details on research in this theme.

The Interagency Panel for Research and Development on Adolescence has prepared a Fifth Annual Report published by Muriel V. Berkeley (1978) of the Social Science Research Group at the George Washington University. It summarizes the major research themes of the various federal agencies. The model she used examines specific program areas (work experience opportunities, youth participation opportunities, preventive health care opportunities, etc.) by the extent to which they enlist family, community, and societal resources to enhance physical, cognitive, and socioemotional development of different target populations.

In a talk at the second Career Education National Forum, I identified four systemic issues that separated researchers on school-to-work transition problems: (1) whether the researcher focused more on technical skill learning or on personal and social development; (2) whether the researcher emphasized individualism or altruism regarding duty to society; (3) whether the researcher leaned more toward Marxism or toward more orthodox free-market Chicago school of human capital theory; and (4) whether the research is centralist, favoring national manpower planning and categorical controls or is decentralist, favoring local control and block grants with a minimum of federal intervention.

Clearly any number of taxonomies can be used to classify research questions. My latest thinking on the school-work transition problem features a dualistic analysis which is summarized in a draft paper which I intend to publish. The intrinsic-extrinsic dichotomy is useful because it yields two separate research agendas:

1. Research Agenda From an Extrinsic Perspective

   An extrinsic perspective of the transition problem leads to questions about the best ways to help people get and keep jobs. Evaluations of the extent to which various types of training programs place graduates in jobs for which they were trained grow out of this perspective. Investment in labor market data-collection and projections to determine what forms of training are needed also come from an extrinsic perspective. The emphasis is on the accurate description of the job market demands.

   Determining the skill requirements of various occupational clusters assumes central importance in helping young people bridge the gap between school and work. Surveys of employers must be conducted to determine the origin of skills among their employees. Training and certification pathways differ by occupation, industry, and by skill level. Pre-employment training may or may not be required.

Some occupational clusters require very little pre-employment training; most of the training occurs entirely on the job. The research on transition problems of such job market entrants may focus on evaluating alternative procedures for assisting them with job placement, e.g., assessment, counseling, job search workshops, interview techniques, occupational guidance, job information systems, etc. Other occupational clusters require extensive training off the job. The research on transition problems of such job market entrants may focus on evaluations of alternative training opportunities, e.g., public school, training center, proprietary school, equipment manufacturers. Some of these approaches may be more cost effective than others. The results of such studies generally do not distinguish outcomes that are attributable to the program's certification and placement capabilities from outcomes that can be ascribed to the added value (growth in human capital) of the training per se; that provides another research challenge.

In the extrinsic perspective, one's research agenda places high priority on studying the structure of the labor market, especially those structural barriers that retard career development of groups with special needs. Studies of union job protective requirements, as in the case of arbitrary escalation of credentials, or studies of discriminatory practices in hiring, compensating, and promoting minority group members, women, or the young, are given high priority because we need to have more information about such problems before we can rectify them.

Some research priorities can be discerned from topics where much work is being done. For example, most of the educational upgrading in the labor force between 1950 and 1970 is due to upgrading (credentialism) within occupations rather than due to technological changes in the occupational structure that demand a higher skill level. Rodriguez, 1978). And most of the upgrading is at the level of the high school diploma, thus placing pressure on greater numbers of young people to seek a college degree as a passport to a permanent place in the primary workforce. A high priority research area in the extrinsic view is the study of labor market segmentation. Human capital theorists maintain that the structurally unemployed cannot be incorporated into the workforce because of insufficient education -- the barriers to be overcome are claimed to be the skill deficits of the workers rather than barriers within the job market itself. Yet, recent research indicates that differentials in earnings between the primary and secondary labor markets cannot be explained away entirely by differences in labor force composition, quality, or worker characteristics. There exist significant variations in the structural characteristics of the two labor market sectors -- in the way that worker characteristics are rewarded, and in the rules by which they operate (Beck, Horan, & Tolbert, 1978). The implication of this line of research on school to work transition must take into account the dual structure of industrial capitalism; it must also abandon the assumption that one's extrinsic rewards in the workforce are solely a function of level of education and training.

Closely related to the above is research on present innovations in redesigning social systems in work organizations to aid in the more appropriate design of those systems. In many companies employees are becoming involved in the design of their work system. Participation in such activities can be a desirable form of work experience for young people preparing to make the transition from school to work. In short, from an extrinsic perspective, research on changes in the workplace will help policy makers and educational practitioners design transitional vocational education services more responsive to societal needs. See the 1978 "Conference Report on Youth Unemployment: Its Measurement and Meaning," published by Department of Labor, Employment and Training Division, for research in the extrinsic perspective.

2. Research Agenda from an Intrinsic Perspective

An intrinsic perspective of the transition problem leads to questions about how to improve the quality of present educational experiences rather than how to prepare for future jobs. The intrinsic purpose of education is not subordinated to long-range occupational goals but rather to help young people find pleasure in the education process itself. Three general questions that emerge from an intrinsic perspective are: (1) what are the most effective learning experiences for helping the young to achieve adulthood?, (2) who should serve as role models in helping the young become adults?, and (3) what are the most effective ways of articulating learning experiences in community organizations with campus academic programs to enhance personal development of youth?

In "The Relationship of Education and Work," (1978) I describe a set of treatment variables derived from social learning theory which are hypothesized as contributing to the intrinsic value of an educational experience.

For example, if students are exposed to a variety of work experiences with the properties (quality role models, rich network of communication, opportunities for self-regualtion, realistic consequences, etc.) described in the article, it is hypothesized that they will enjoy greater personal growth than would be the case with work experiences that do not contain those elements. This is easier said than done; a full-blown program of research and development is needed to test this hypothesis. In order to test the hypothesis we must first develop valid instruments to measure these treatments to insure that they are implemented as planned. There has been a failure to measure the treatment in most reports on school-to-work transition programs. Variations in fied site experiences increase the likelihood that different studies are not comparing the same treatments even when they bear the same label. There have been virtually no studies that tease apart the treatment components and try to specify the crucial variables that make the experience more or less effective. This deficiency makes replication of a study impossible. Therefore a major step in the sequence of research activity is to develop valid measures of implementation. Such measures should be compared with independent criteria to establish their validity and should be developed from the same theoretical model that was used to specify the treatment. These measures should also be used as a manipulation check to insure that the actual treatment interventions that have been implemented coincide with the intended theoretical model.

A second class of instruments must also be developed to measure the intended learning outcomes. If the transition problem is viewed from an intrinsic perspective, such outcomes are related to the personal development of the student (e.g., locus of control, self-esteem, communication skills) rather than job placement, income, or other intrinsic outcomes. Unfortunately, there are no completely adequate measures of such outcomes. It is not sufficient to depend on existing paper-pencil self-report instruments for our measures of maturational outcomes. The validity of these measures is sadly lacking, and much research and development work is needed.

A third class of instruments which must be developed in the exploration of intrinsic outcomes is a set which measures student attributes that may moderate the influence of the treatments. Frequently researchers measure only one characteristic, e.g., age or sex, and ignore other attributes, e.g., personality, cognitive style, attitudes, which may interact with the treatment.

A fourth class of instruments which needs to be developed are those which measure the organizational and ecological characteristics of the larger environment that may moderate the influence of the treatments. For example, within organizations where students are participating in work experience programs such dimensions as peer cohesion, freedom of expression, competitiveness, staffing ratios, salary levels, composition of group membership, orderliness, and role clarity can have as much effect on personal growth outcomes as the impact of the intended treatment itself.

When adequate measures of these four classes of variables have been developed, the research program would attempt to test clearly defined hypotheses concerning the relationships among these variables. Such experiments would be conducted with adequate samples under conditions in which potent treatments would be tried over a long enough period for unambiguous results to emerge.

The significance of such a research program is that we would obtain a better understanding of how effectively we are facilitating the transition of youth. We can determine whether vocational education and employment and training programs which are theoretically effective actually produce more effective functioning and personal development in youth than programs without such features. Such knowledge would have distinct implications for future legislation on vocational education and employment and training programs.

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WORKING NOTES FOR RESEARCH IN CONNECTION WITH TRANSITION FROM SCHOOL TO WORK

Richard A. Graham

Transition from school to work is part of growing up, coming of age, or joining society. The transition is of particular concern to vocational education, but it highlights broader problems in American education. The problems can be put into three broad categories, from which research questions can be drawn and research projects can be developed. These categories are:

- problems of equity in education, of rich and poor, and of setting intermediate goals for achieving it.
- problems of theory and, stemming from these, problems of effective program design.
- problems of implementation, of general persuasion and organization of resources, linkages, and procedures necessary to carry out the programs.

I. Problems of Intermediate Goals in Achieving Equity

Neither the President's Domestic Policy staff nor the Congressional committees explicitly state the amount of educational improvement they seek, over a discreet period of time, from the array of education, training, and employment programs they advocate or enact. The Domestic Policy staff and the Congress have specified reasonably precise goals for increasing the employment of youth but economic and demographic vagaries make it difficult to determine whether education and training programs have played their part in improving the transition from school to work. A way of measuring the aggregate success of U.S. education and training programs is needed, a measure that would complement employment statistics in assessing overall effectiveness.

The national problem is not so much to improve transition from school to work in general (as indicated in Fig. 1), but to greatly improve transition from school to work for poor minority youth and to improve the transition more modestly for others. (Shown in Fig. 2). The difficulty here is stating the desired progress in terms that can be measured. It is, moreover, a problem of giving approximate weighting to several factors that together constitute a measure that might be called "Transitability" of American teenagers. It's not a measure of education, it says

FIGURE 1.

DISTRIBUTION OF TRANSITABILITY (TRANSITION FROM SCHOOL TO WORK ABILITY) OF U.S. 18 YEAR OLDS

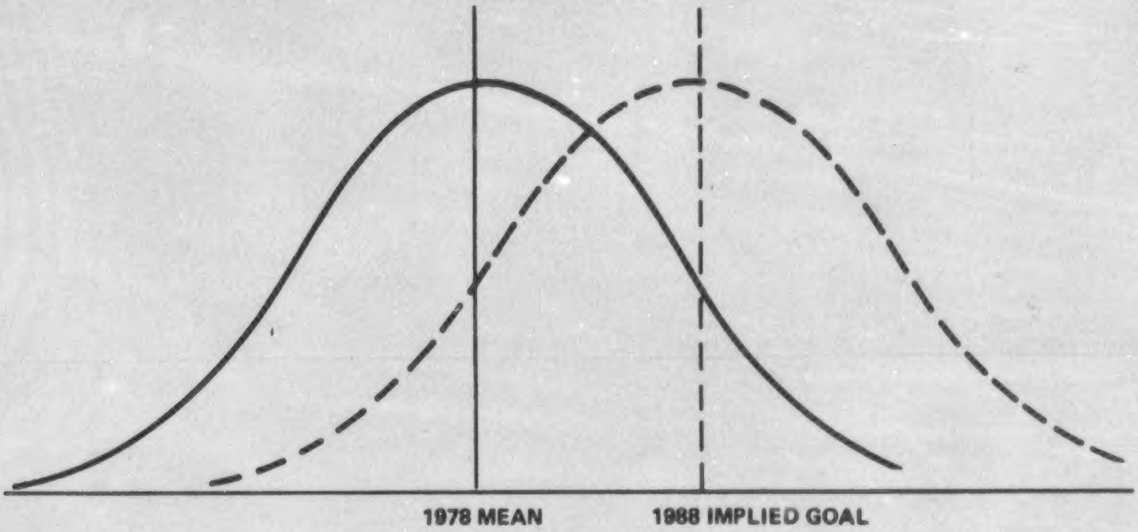
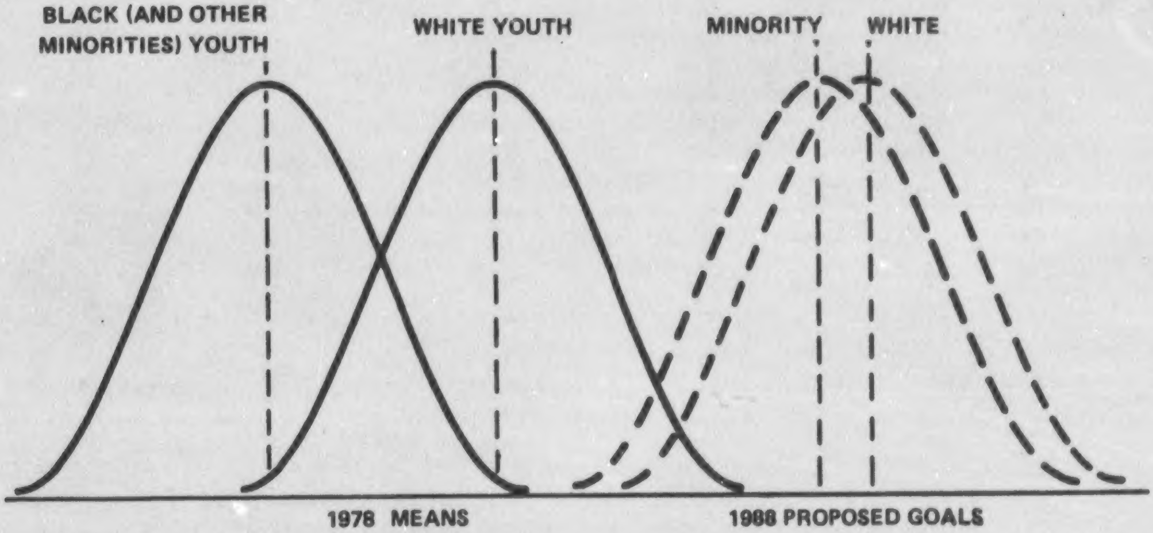


FIGURE 2.



little about culture or creativity, but it probably is a useful concept for assessing the ability of a teenager to get a job or choose further education. For whatever reasons, the transitability of disadvantaged youth as compared to middle-class youth has gotten worse in the past 15 years. Transitability includes the basic reading and writing skills, vocational skills, coping skills, and standing. Standing is related to measures of maturity, judgment, and stability, things that so far have proved hard to measure, but which are generally necessary to a successful transition. They will be more fully explained later.

The Problem of Equity

The plight of disadvantaged youths, compared with the difficulties of youths from middle-income families, as judged by employment and labor force participation, has greatly worsened over the past 15 years, in spite of the many federal programs of education, training and employment, and Civil Rights legislation. Overall, the differences in years of schooling between white youth and black youth have almost disappeared, but the differences in educational accomplishment remain practically the same with the poor minorities lagging by almost as much as they did 15 years ago. Although the disparities in employment have continued to worsen year by year, there are some reasons to believe that they may no longer do so. The back-to-basics emphasis in education and efforts comparable to those of Rev. Jesse Jackson's PUSH may have already begun to reverse the trend, but as yet there is no evidence to support this assumption. Nor, indeed, is there conclusive evidence as to the origins of the problem.

The question is, therefore: Why the apparent failure of the laws and programs that were designed to make growing up in America more nearly equal for the disadvantaged and the middle-class? What reason is there to believe that the recent emphasis on career education, work experience and youth employment will improve matters? What, if any, changes should be made in vocational education to complement these efforts?

The evidence so far: There is no clear explanation as to why minority youth have failed to improve their academic achievement and employment in proportion to their increased years in schooling, but there are considerable data that could provide an explanation and lead to a solution. These include the following research conclusions that need confirmation, in particular confirmation that the things mentioned below have worsened for poor minority youth:

- economic achievement appears to be more strongly related to an "attachment" to a school than to the number of years of schooling completed. Minority urban youth from poor families tend to go to large high schools where school attachments appear to be more difficult to make.

- students with a number of arrests had fewer additional arrests if they dropped out of school than if they remained. Poor minority urban youth often belong to groups that are at least partly adversarial to mainstream society and, if this is true, there is less reason for them to take the action necessary to join that society, that is, to prepare for a job, seek it, and keep it.

- programs designed to increase a student's self-confidence and esteem sometimes increase these qualities for reasons unlikely to lead to further education or to steady employment. Some programs designed to increase ethnic pride seem to have done so, but at the expense of seeing "the establishment" (and its employers) as the other side.

- keeping a job depends more on the ability to get along with supervisors and fellow employees than on job skills. Youths, in particular, tend to get along better with those who are similar to themselves and there tend to be fewer minorities in positions of authority.

- a higher percentage of minority youth, as compared to white majority youth, were in the labor force (employed or looking for work) 15 years ago. A higher percentage of minority youth may now think that looking for work is not worth the effort.

- maturity as measured by how one decides what to do, is more a matter of being able to put oneself in another's shoes than it is of one's knowledge or the quality of counseling one receives. Job status and income seem to depend significantly on the level of vocational maturity, and poor youth, appear to receive an education that is less likely to develop such maturity.

- unexplained factors - sometimes referred to as luck and chance - have more to do with what kind of work one does than does IQ or level of education. Minority youth tend to have fewer opportunities for the kind of luck and chance that changes lives for the better. (See later discussion.)

- Most teenagers make decisions based upon what their friends think and do, rather than upon career goals or the advice they receive from adults. Disadvantaged youth, as compared to middle-class youth, probably place greater emphasis on group attachments and hence are more reluctant to seek work out of their neighborhoods. This, coupled with the fact that a higher percentage of new jobs has been created in suburban areas in recent years, makes job hunting tougher for minority youth.

- there are several differences in the way poor minority youth look for and land jobs and generally this works to the disadvantage of the poor minorities.*

- Poor minority youths tend to have lower standing with potential employers than do white youth and, though there are reasons for some of this (minority youth, on the average, score lower on tests of basic skills), much of it is based on unwarranted racial prejudice - e.g., "Black kids are not as interested in work as white kids". The problem is that academic credentials generally count for less than personal references or work history, and these latter are harder to come by for minority youth. Employers say that a diploma or certification of completion of vocational training tells little about how well a person will do on a job.

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* Racial Difference in Private Sector Job Search and Employment - Black teenagers tend to seek jobs in different ways than whites --they tend to use employment services and ads to greater degree but use personal and family connections to a lesser degree, because they tend less often to have such connections. Small employers tend to use personal contacts for reaching potential employees to a greater degree than do larger employers. The large employer tends to give more weight to credentials, to work and personal histories, arrest records and the like. The small employer, though often paying lower wages, generally will hire younger employees and will provide greater opportunity for learning on the job along with a more personal relationship between supervisor and employee. The larger employer generally pays minimum wage or above and tends to employ older youth and adults.

The black teenager tends therefore to be at a disadvantage not only in getting a job but also in getting a job with the kind of personal relationships that often go with learning both occupational skills and the harder-to-define qualities of self-assurance and practical ambition which improve one's chances of getting ahead.

Implications for Research on Problems of Intermediate Goals for Equity

Although there are in the above observations several hints at the reasons for growing inequity in the transition from school to work for the poor minorities, a clearer explanation is needed. The following research is recommended:

1. An analysis that compares the findings of the major cross-sectional and longitudinal studies of youth, their opinions, education, employment, e.g., Youth in Transition, Project Talent, Coleman, Parnes' National Longitudinal Study, Department of Labor Continuous Longitudinal Study, Class of '72, Class of '78, etc., from which cause and effect relationships can be established between attitudes (including generational norms) and experiences in employment and other subsequent life outcomes.

2. Reexamination of the importance of group norms on the adoption of individual conventions and the importance of group heterogeneity on the advance of a participant's pattern of judgment.

3. Conduct of a "value added" research project comparable to the Harvard-based project for post-secondary educational institutions.

4. The addition of cognitive developmental measurements (ego development, social perspective, etc) to the longitudinal studies referred to in Item 1 above.

5. Extension to vocational education programs of the project on the outcomes of experiential learning now being conducted by the Center for Youth Development and Research at the University of Minnesota on behalf of the National Association of Secondary School Principals, the National Catholic Association, and the Independent Schools Association. In connection with this, additions to their design might (1) include the use of instruments to measure the cognitive development as suggested above, (2) the use of the inventory developed by Frieberg of the Educational Testing Service and (3) the Measure of Psycho-Social Maturity developed by Ellen Greenberger and others at the Johns Hopkins University.

II. Problems of Theory and of Program

National efforts to achieve equity have no coherence in theory and hence less coherence than they could in practice. While a working accommodation between conflicting theories of human development is all that can be expected for the foreseeable future, the net effect of federally assisted projects could be increased by provisional agreement by program designers on the relative importance of the things that affect the transition to work. A path model is a graphic representation of interrelated causes and effects in one's progress toward life's goals. Figure 3 shows a typical path model based on data for non-farm white males, as presented in INEQUALITY: A Reassessment of the Effects of Family and Schooling in America by Christofer Jencks and seven others. It is the model which they say "represents our best effort at describing the determinants of adult success in America". Data for women and minorities would produce a somewhat different path model but the same general conclusion could be drawn: schooling has less effect than is generally assumed; luck, chance, or unexplained factors have greater effect.

Reducing the Effects of Luck and Chance: Contriving Fortuitous Events

The implications for research on "transition from school to work" are these. Research is needed to determine:

a. in what ways opportunities for the fortuitous differ between rich and poor, majority and minority.

b. the approximate effect of these differences.

c. in which ways greater opportunities for the fortuitous can be contrived in programs of transition from school to work.

d. the anticipated effect of increasing these opportunities.

e. what other unexplained but significant variables are lumped with luck and chance but which might instead appear as program components in the path model. For example, "educational attainment" might be seen as having two components, institutional and experiential, with the latter so designed as to contrive experiences that are now largely left to chance. Without this contrivence, the well-to-do are certain to have greater opportunity for the fortuitous event than the poor.

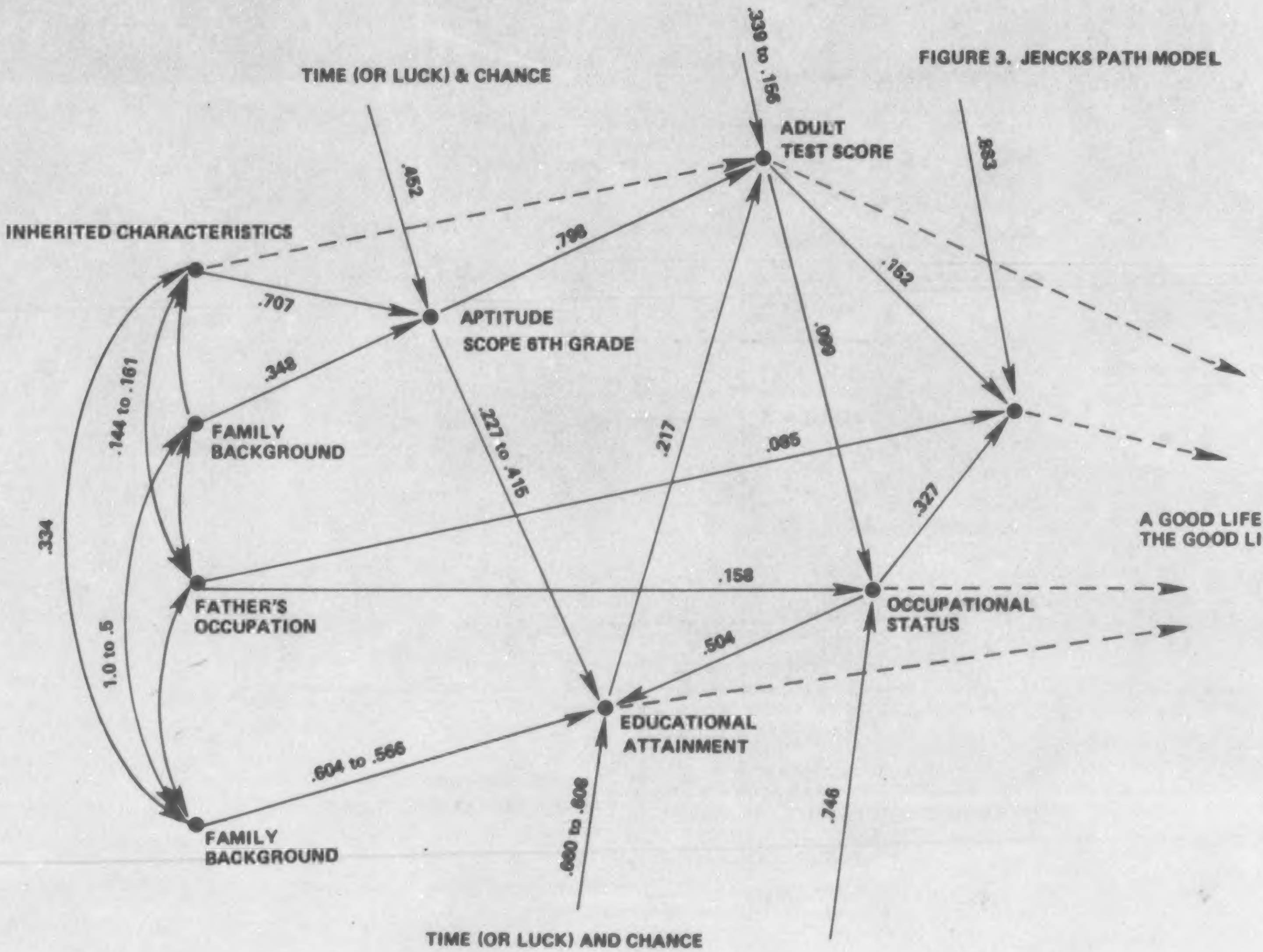
FIGURE 3. JENCKS PATH MODEL

TIME (OR LUCK) & CHANCE
.339 to .156
ADULT
TEST SCORE
.883
.452
INHERITED CHARACTERISTICS
.796
.152
.707
APTITUDE
SCOPE 6TH GRADE
.080
.348
.144 to .161
FAMILY
BACKGROUND
.227 to .415
.217
.085
.327
A GOOD LIFE
THE GOOD LIFE
.334
.158
FATHER'S
OCCUPATION
OCCUPATIONAL
STATUS
.504
1.0 to .5
EDUCATIONAL
ATTAINMENT
.604 to .566
.660 to .608
.746
FAMILY
BACKGROUND
TIME (OR LUCK) AND CHANCE

To contrive the fortuitous involves more certain opportunity through experiential programs for:

- taking novel responsibility
- finding a mentor or inspirational friend or helpful spouse
- seeing new perspectives: career, faith, purpose, duty
- acquiring standing (skill, ability, distinction, or notability)
- developing a new interest
- being accepted by a congenial group
- establishing a network of friends in power or position*

Figure 4 below shows some of the common personal and program measures of experiential learning. They are:

- Personal Outcome Measures
  - basic skills
  - occupational skills
  - coping skills (maturity, psycho/social)
  - judgment
  - career decision making (self-directed search, vocational aptitude tests, job knowledge, etc.)
  - self-image (self-esteem/confidence)
  - work attitudes (work-related attitude inventory, job holding skills tests, etc.)
  - job-seeking ability (skills test)
  - other fortuitous assets

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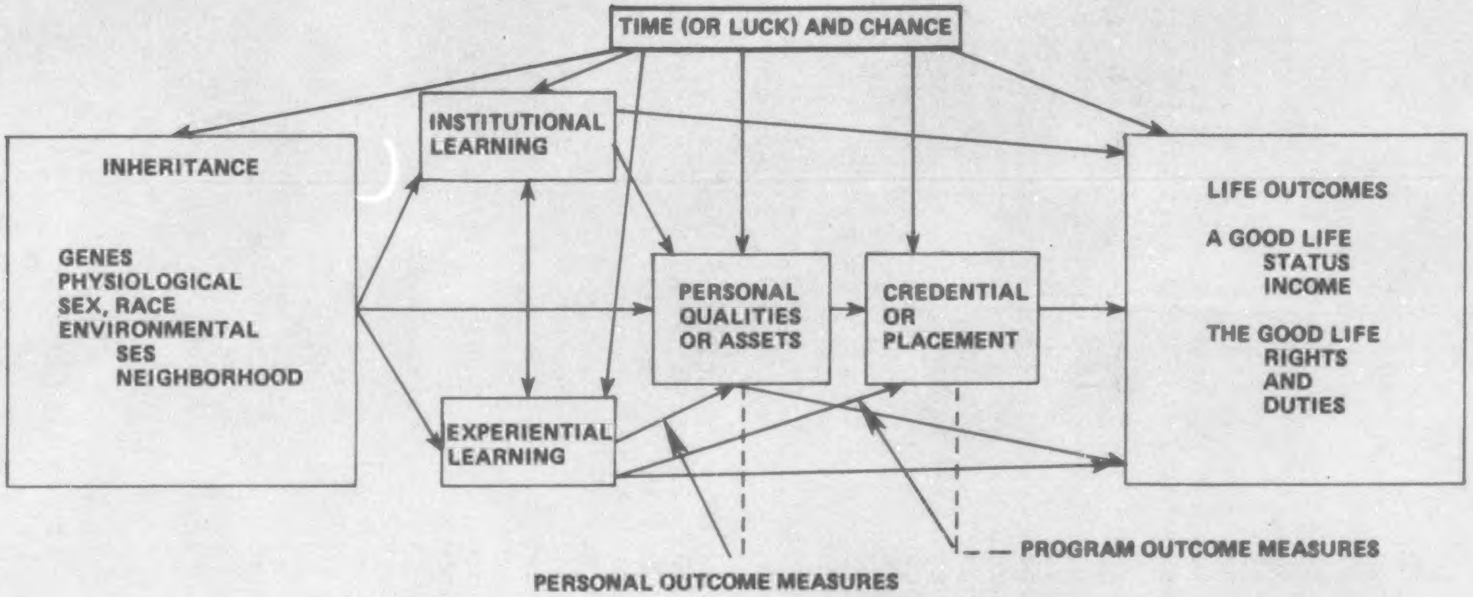
* To achieve the above, there is need for a Practitioner's Guidebook for Contriving the Fortuitous.

FIGURE 4. ALTERNATIVE PATH MODELS


TIME (OR LUCK) AND CHANCE
INSTITUTIONAL LEARNING
INHERITANCE
GENES
PHYSIOLOGICAL
SEX, RACE
ENVIRONMENTAL
SES
NEIGHBORHOOD
PERSONAL QUALITIES OR ASSETS
CREDENTIAL OR PLACEMENT
LIFE OUTCOMES
A GOOD LIFE
STATUS
INCOME
THE GOOD LIFE
RIGHTS
AND
DUTIES
EXPERIENTIAL LEARNING
PROGRAM OUTCOME MEASURES
PERSONAL OUTCOME MEASURES

- BASIC SKILLS
- OCCUPATIONAL SKILLS
- COPING SKILLS
    MATURITY
- JUDGEMENT
- OTHER FORTUITOUS ASSETS
- JOB SEEKING ABILITY—SKILLS TEST

- CAREER DECISION MAKING
    SELF DIRECTED SEARCH
    VOCATIONAL ATTITUDE TEST
    JOB KNOWLEDGE
- SELF IMAGE
    SELF ESTEEM/CONFIDENCE
- WORK ATTITUDES
    WORK RELATED ATTITUDE INVENTORY
    JOB HOLDING SKILLS TEST

- Program Outcome Measures
    - credential or placement
    - standing**
    - retention (how, etc.)

Measures of Program Effect on the Fortuitous. There is some overlap between personal and program outcomes and the research recommended here could apply to either. It involves developing measures of experiential programs in terms of the degree to which they provide opportunity for taking novel responsiblity and for experiencing the other six fortuitous items in the list above.

Measure of Program Effects on Standing. A measure of standing is needed as a program outcome. Employability is only one component of "transitability" and employability is for the most part determined by standing, a complex mix of skills, academic credentials, work history, and personal contacts. Most education and training programs are designed to develop skills and confer credentials rather than provide standing. Programs such as the Executive Internships provide standing that is derived from the recommendation of a person in power or position and the network of contacts that generally come with close association with such a person. If standing can be better defined, it can more easily be made a program goal and the program outcomes can be better assessed.

Generational Effects. The path model shown in Fig. 4 and the implicit path model in the minds of educational program designers and administrators generally neglect generational effects. Although the generation in which one grows up has profound effect on one's attitudes and actions in the transition years, (see studies by Schaie, and the references in his bibliography) it is generally assumed that these effects are governed by luck and chance. Whether one grows up in a depression or a boom, with the *Little Engine that Could* or *Jonathan Livingston Seagull*, with a drug or straight generation, whether in an altruistic or materialistic generation, is mostly a matter of chance. Although there may be some kind of cyclic swing in attitudes towards work, not

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** A person has standing if he or she is an all-American, has worked for a good president, mayor, legislator, business or Civil Rights leader; has published or performed or exhibited in certain places; if one's name is Rockefeller; has made Law Review at Harvard; etc.

much is known about it. There is, therefore, a need for research in:

- whether there are cycles of youth attitudes towards work and the effects of these cycles on the life outcomes of youth.
- whether the pervasiveness and duration of these cyclic attitudes can be predicted by general sampling of youth attitudes on a regular basis.
- whether there is an identifiable forerunner group whose attitudes can be sampled in ways that will predict the pervasiveness and duration of these generational effects.
- whether there are other sub-groups whose attitudes lag or are countercyclical.
- whether, given the ability to predict pervasiveness and duration of a cycle, it is possible and desirable to ameliorate its effects. Greater ability to predict effects - and publicize them - might trigger action agreed upon in advance, much like those efforts to dampen swings in the economy.

Problems of Theory as They Affect Program Design. If cognitive developmental theory is correct, many transition to work programs are incorrect in their assumption that adolescents possess the same structure of reasoning as most adults. These programs assume that since the necessary information for career choices is lacking, if it is supplied, adolescents will react as rational adults. Adults close to adolescents know that this is not so, that most adolescents are guided to greater degree by what their friends do and think than by a career plan. Adults may think that this is for want of career information, but developmental theory - and a great deal of evidence - holds otherwise: adolescents tend to think in qualitatively different ways, that career planning - and hence much of transition - can be achieved more effectively by a combination of:

- peer pressure; by changing the norms or conventions of the peer group
- change or diversity of the "group" or "groups" to which one belongs, e.g., to a new work group, to a mentor and his or her associates, to a new team, performing group, etc.

- change in the individual's basic reasoning, as in Piaget's change of stage, or a change in the related stages of ego development, social perspective, or judgments of what one ought to do. Only in the past few years have there been conscious efforts to bring about changes in the stages of reasoning, and although there have been some promising results, these studies require confirmation.

The mismatch of adult processes of reasoning and those of adolescents becomes evident in many programs of counseling. Additional research is needed to explain this phenomenon and its effect and to make it understandable to counselors, teachers and program administrators.

Theory and Practice: The Fit Between Them

There is a need to test transition program designs against both the generally accepted theory of human development and the practices that have proved successful. A checklist of these is needed and would not be hard to come by. Strangely enough, there has been little effort to test program designs from both perspectives concurrently and there is considerable evidence that the programs have suffered for it.

Problems of Implementation: Providing Growing-up Jobs for Youth and Other Problems

Implementation problems involve finding more effective ways to link education with the training and employment resources that serve adolescents. There is the problem of finding agreement on goals, and the problem of channeling federal funds so as to induce collaboration in valid and feasible transition to work programs. High among current problems is the need to reallocate the existing resources, and to make a case for additional resources, so as to provide enough growing-up jobs for every adolescent to have a job that fits his or her needs. Before this can be done, though, research is needed to develop:

1. An approximation of the aggregate national need for youth jobs. This could be approached by determining in a high school of 1,000 students the average number of each of the following sorts of jobs:

    - parttime, casual employment, unsubsidized jobs (yard work, baby sitting, cleanup, etc.)

- social service, volunteer, nonpaid jobs (tutoring, helping the aged, handicapped, etc.)

- social service, at least partially subsidized by CETA or equivalent (working for United Way or a municipal agency)

- school or community organization sheltered, income producing, partially subsidized jobs (running a school cafeteria or a sub shop, running reproduction services or a printing shop, running a youth employment agency, running a school-based loan agency or enterprise bank for students in the same fashion as a small business investment corporation

- private sector, unpaid work experience jobs (e.g., experience-based career education)

- private sector, at least partially subsidized jobs, some with emphasis on work experience, some on parttime employment (The VEPS program of the National Alliance of Businessmen or equivalent. The JOBS program, on-the-job training, etc.)

- private sector, unsubsidized jobs.

The number of each of these jobs should increase as a result of federally supported programs under CETA, vocational education, career education and the like. Of the kinds of jobs listed above, least is known about school sheltered, income producing jobs. This category may offer the greatest opportunity to increase the number of youth jobs and to do so through programs that best meet the test of theory and successful practice in transition to work.

2. Approximation of the aggregate local, state and federal costs of providing the needed jobs in all of the above categories.

3. Approximation of the cost to create a job in each of several categories about which little is known, specifically the cost of creating a school sheltered income-producing job as compared with the cost of creating a job of comparable educational value in the private sector.

4. An approximation of equitable distribution between local, state and federal sources of the additional costs of carrying out these programs.

5. Approximation of the relative effect on adult displacement of creating youth jobs in each category

6. Supervisor and other job descriptions and competencies required for the new roles called for in these new programs (e.g., in school sheltered income-producing projects), and descriptions of programs of training and experience that will develop these competencies.

7. Descriptive research on exemplary use of CETA resources to provide vocational education for students who do not academically qualify for admittance to regular vocational educational programs.

8. Analysis, from the vocational education perspective, of the studies of collaboration between CETA and state and local educational agencies, including the following: vocational education, cooperative education, career education, the distributive education clubs, the Future Farmers of America, the Junior Achievement, etc. Studies now underway by the National Association of State Boards of Education, the Council for Employment Policy, the Bureau of Occupational and Adult Education and the Office of Career Education of the U.S. Office of Education are examining these questions. Additional data collection is probably not needed, only analysis of these reports from another perspective.

9. Descriptive research on ways to support with state and local funds those alternative schools which serve youth who are not well served by regular school programs. This assumes that such schools can achieve agreed upon educational objectives at costs that are comparable to the costs of the regular school or at costs clearly justified by the greater difficulty of helping these youths. This might involve updating voucher research and the problems that alternative schools pose for teacher and counselor bargaining organizations.

10. Descriptive research on the optimum trade-off between the benefits of targeting programs to low-income participants and the benefits of having a mix of participants with differing conventions and patterns of reasoning. There are several studies under way to provide data for the descriptive research or analyses recommended above and although some additional data may be needed, the analyses could begin with the data now being collected.

SUMMARY

The research and analyses that should be undertaken should emphasize agreement on goals for job creation, labor force participation and employment for youth, goals that will look to the eradication of the discrepancies between poor minority youth and the middle class majority. The goals will include the establishment of criteria for measuring the ability of an adolescent to make a successful transition from school to work. This measure of transitability will take into account basic skills, work skills, maturity and standing. It also will permit the comparison of the effectiveness of various educational, training and employment programs in developing these skills.

Agreement is needed on an approximate path model showing the relationship between background, education, training, chance events, and what one makes of life. From agreement on this model should come agreement on the desirable changes in programs of education, training and employment and the cost of making these changes. Agreement on these changes should lead to a determination as to which organizations ought to do what part of the job, what collaboration is needed, how money will be raised and how it will flow.

APPENDIX

Summary of Interviews with Four Validation Panelists

Rupert Evans

Professor of Vocational-Technical Education

University of Illinois

Verification Interview

Vocational Education Needs and R & D Priorities

August 23, 1978

After Morrison provided a brief explanation of the purpose of the interview, Evans explained some of the thinking behind the needs he had checked as highest priority for R & D.

Coordination. To what degree does vocational education serve as a vehicle for basic learning? Vocational education often claims that it teaches reading and computation skills to people with whom other education groups do not work very well. Evans would like to see this claim examined, and if it is valid, to see the circumstances under which such teaching is most effective.

Career Development. Evans opened the discussion of career development by referring to the *Phi Delta Kappan* article by Eggington on the attitudes of vocational students. Although Evans was critical of this particular study, he thought it addressed an important topic. This topic could probably best be summarized as socialization for the workplace. Evans cited the work of several revisionist historians (Calahan, Feinberg, Violas) who have argued that vocational education is designed to produce "docile wage slaves." Their argument, according to Evans, is that since World War I education has been primarily concerned with enhancing productive efficiency and vocational education is part of this general historical trend. These historians claim that when the capitalists were cut off from the cheap labor supply in Europe, they turned to public education, particularly vocational education, to fill their labor needs. Vocational education was structured to produce graduates who were willing to accept the discipline of the work place.

Evans asked, if this view of vocational education were to be accepted, what would be its implications? Would not placement in related occupations be higher if the emphasis were truly on producing docile workers? How do the occupational areas differ in the attitudes they develop in workers? Evans cited agriculture and office occupations as two areas that are likely to produce quite different kinds of attitudes. How would one deliberately design a program to produce a desired set of attitudes?

Evans reported that the most controversial work he has ever done was to include among the objectives of vocational education "increasing the options available to students" and "using vocational education as a motivating force to enhance all types of learning". Evans said he was surprised by the number of vocational educators who think the primary function of vocational education is to supply skilled workers for the needs of society. These educators seem to feel that if young people gain things of personal benefit that is fine, but that vocational education should not spend its time trying to produce these personal benefits. Evans thinks some research on the goals of vocational education--what they are what and should be--would be useful.

Personnel Development. Evans checked personnel development as a need requiring research; he thinks that standards for vocational teachers have been "vastly lowered." He would like to know how this change came about and what its effects have been.

Research and Development. Evans described some of the present research he is conducting on the outcomes of previous R & D in Illinois. He identified some projects that state officials consider among their better products. Evans is now trying to trace these projects to the point where they no longer had any impact on actual practices or to the point where those who were using the techniques no longer knew they were derived from research.

In another project Evans is trying to determine the comparative advantages of on-the-job and laboratory based instruction. Which is the better setting for accomplishing different types of objectives? He is studying this problem with handicapped populations in settings such as sheltered workshops and state institutions. Evans noted that mentally handicapped students go through a prevocational program before part-time cooperative placement, yet this practice is not considered necessary for the nonhandicapped who enter part-time cooperative vocational programs.

Morrison noted that the question of OJT versus laboratory training is part of the general question of the effective conditions of learning. Evans agreed and referred to the changes in the military during the 1950's from OJT to the laboratory; now the military appears to be going the other way. OJT is an effective way of dividing up and hiding the real costs of training. Since we are not in an active war, everyone in the military is training now.

Special Needs. Evans mentioned the relationship between socioeconomic status and vocational education. He said there is clear evidence that secondary vocational education students tend to be from the lower half of both the SES and verbal ability distributions. Students who go on to two-year postsecondary training tend to be low on one of the distributions and high on the other. This happens with no other group. Evans wondered what the reasons for this might be.

Evans reported that many directors of vocational education in the large cities do not want to be involved with programs conducted under the Youth Employment and Demonstration Projects Act and asked who is conducting these programs? Evans hears many vocational directors wishing for the "good old days" when they selected the best of their applicants for training. Lewis commented that during those good old days vocational education was frequently referred to as a dumping ground. Evans replied that this has always existed--elite programs for the best students side by side with "dumping ground" programs.

Returning to the problem of the handicapped, Evans said that there is evidence that the parents of handicapped children migrate to areas which have the best programs for their children. One policy implication of such a finding is that programs for the handicapped should not be funded with local resources, that providing for the handicapped is a broader responsibility. Evans also said that it is proving difficult to satisfy accountants when vocational education delivers services to special groups in mainstreamed classes. It is far easier to satisfy accountants when we provide services in special classes. Thus, Evans noted, decisions get made for bookkeeping reasons rather than educational or social reasons.

Other Issues. In addition to the needs which he checked as highest priority for R & D, Evans commented on a number of other issues facing vocational education.

Evaluation. Evans feels vocational education needs something equivalent to the economist's concept of value added. Instead of merely looking at employment or any other output measure alone, assessment should include what a program has achieved with a student (difference between entry and exit behavior). Eli Ginzberg has suggested that a criterion of effectiveness be whether a training program produces an employable worker, not an employed one.

Demographic Trends. Evans asked what will happen to vocational education when the population in the secondary-postsecondary age range drops by one million per year? Experience in Germany and Japan suggests that as a shortage of young people appears, the proportion of the available population that enrolls in vocational education increases.

Labeling. Evans would like to see some research on the effect of labeling. He sees signs that federal support may be limited to aid for the handicapped and disadvantaged. If this happened would vocational education be seen solely as a program for the hard-to-employ? Would employers be willing to hire or enter into cooperative programs for vocational students? Evans referred to the current debate over whether CETA should be limited to the structurally unemployed. CETA sponsors want 10 percent who are not chronically unemployed to avoid the labeling of the whole program.

Another aspect of labeling concerns the value of mainstreaming for handicapped students. Does placing the handicapped in regular classes avoid labeling?

Structure. Evans noted that there is considerable discussion of whether vocational education should be offered at the secondary school level. If it were to be moved, what would be the effect on the dropout rate? As the percentage of dropouts continues to increase, there is more reason for programs such as YEDPA. Most secondary school dropouts occur at age 16, before entry to vocational education. What would be the effect on the dropout rate of removing any chance for enrollment in secondary school vocational education?

Charles Law

State Director, North Carolina

Verification Interview

Vocational Education Needs and R & D Priorities

October 20, 1978

After a brief discussion of the purpose of the interview by Morrison, Law reviewed the five need areas he had checked and explained his reasons for checking them.

Curriculum Content and Introduction. In Law's view nothing that a state does is as important as its work in instruction and the development of curriculum. To Law an SEA is a teacher education institution. Some of his colleagues sometimes ask Law about his enforcement responsibilities. Law's reply is that he is an enforcer, but what he enforces is the competency of students. If this is achieved, every other important rule is enforced.

Law believes that it is only through curriculum that a state has any real control. In North Carolina they have developed curriculum units that start with a set of validated minimum competencies in defined skill areas. From these, units of instruction and learning activity packages are developed. Validated test items are available to measure student performance, and an individual competency testing record is provided for each student. This record lists the validated competencies in the skill area and the degree to which a student has mastered these competencies. Coupled with these curriculum units are staff development activities directed to teachers and administrators.

The kind of R & D that Law would like to see involves the transferability of vocational skills. He cited the principles of hydraulics which a student learns in the study of automotive braking systems. He claimed these can be applied in any job that involves the movement of fluids in a closed system. "Students know more than they know that they know," he said.

Law thinks there is a need for federal help in identifying areas of transferability. He added that vocational education needs to acknowledge that many skills are the same across different occupational areas. Law recognizes that there are some who fear that by emphasizing general skills vocational education will lose its distinctiveness, but he does not see this as a real concern.

Personnel Development. Once curriculum that emphasizes transferability has been developed, it will be necessary to train teachers and administrators to use it. Law thinks that many of our past efforts have "left teachers behind." There has been too much emphasis at other levels and not enough attention paid to teachers.

Planning. Law would like planning to emphasize "what we have, where, and why." He thinks planning in vocational education has been attempting to accomplish too much--planning, evaluation, and reporting. In response to a question on supply of and demand for vocational students, Law says the data are not too good, but it is more important to him to know what students can do.

Interaction with Employers/Unions. Law de-emphasized unions in his state because "we don't have a large number of unions." Relations with employers he considers very important. As unions grow, so will their involvement.

General Comments. Law volunteered some general comments on past R & D emphases in vocational education. He thinks there has been too much research on special need, sex stereotyping and so on. Law feels the more we fragment, the less we can deal with the whole enterprise. As a state director, he must deal with the whole of vocational education in his state, not with bits and pieces.

Lewis noted that our other panelists had tended to agree with Law, but that our panel had quite different priorities than a panel NIE brought together in 1976. Law said he was familiar with the NIE panel and when its members are compared to ours, the reasons for the differences are apparent.

Law added that he felt the federal government is "in for a surprise" in the coming years. As the priorities of the states continue to differ from those of the federal government, many states will be writing their own vocational education legislation. North Carolina, for example, passed its own legislation two years ago. If the restrictions on the use of federal funds become more and more strict, the federal dollars will be used where they fit into the state master plan.

Law sees these developments as a backlash against federal restrictions which have become stronger and stronger as the federal government has tried to control what it perceives to be unresponsive states. Law added that he cannot get money from his state's general assembly for the kinds of things Washington wants to do and "frankly I don't want to go over there and ask for it."

George Wallrodt

Acting Executive Director (when interviewed)
National Advisory Council on Vocational Education
Verification Interview
Vocational Education Needs & R & D Priorities
August 22, 1978

Morrison opened the interview with a brief description of the purposes of the study and noted that Wallrodt had crossed off three of the needs on the list he reviewed. When asked if these were general needs of vocational education, not just research needs, Wallrodt said he thought they were general needs. Wallrodt had a number of comments regarding the specific needs which he checked off as most important for future R & D:

Curriculum Content. Wallrodt was interested in new and emerging occupations. He wondered if these will require shifts in present programs or the creation of whole new programs. He asked how far ahead it is necessary to identify new and emerging occupations in order to plan and develop programs.

Wallrodt noted that the U.S. Department of Commerce has been making efforts to track new and emerging occupations, providing the name of a Department of Commerce staff member who has been involved in this effort:

Mr. Theodore Lettes
Room 5092, OMBE
U. S. Department of Commerce
14th & Constitution Ave.
Washington, D.C. 20230
Area Code 202 377-3165

Coordination. Wallrodt feels it is essential that vocational education develop linkages with all the training programs outside of public education. He said the new CETA legislation will put far more stress on institutional training. He thought it would be useful to identify models of successful interaction between CETA and both vocational education and successful in-school youth projects. Then, the elements that underlie the successful interaction might be determined.

Later in the interview Wallrodt returned to this need and mentioned that CETA-vocational education coordination at the local level will be forced by the federal government. At the national level he does not think coordination is too important. He mentioned that the Department of Labor recently issued an RFP for Tier 1 projects to be funded in 16 cities. The proposals had to be submitted in cooperation with LEAs. Several hundred applications were received, which meant that in each of these cities the CETA and vocational education people had to work together to prepare the proposals. Wallrodt also said that new CETA legislation will require a planning process based on the vocational education model. The process must spell out how the CETA program is going to use existing facilities, including vocational education facilities.

A coordination-articulation question that Wallrodt considers high priority concerns the proper roles for secondary and post-secondary level instruction. Wallrodt said it is not necessarily a secondary versus post-secondary question, but more a question of where the most effective training is taking place. Wallrodt posed some specific questions regarding articulation: How much duplication of training is there? Is it possible to make post-secondary instruction the "graduate school" for secondary? Is there a need for four years of training in any area? Are there special post-secondary methods or techniques which are more effective than secondary methods? Is it basically just a question of what level gets the money?

Another type of linkage Wallrodt mentioned is with the Department of Defense training activities. This linkage has two aspects. One is to convert DOD curriculum materials to civilian use, while the second is to assist the transition of trained people from the military to the private labor force. To achieve this second type of linkage it would be necessary to gear military training more closely to civilian job requirements.

Evaluation. Wallrodt cited the heavy emphasis on evaluation in the 1976 Amendments. He referred to the "ton of evaluations" coming in from OE and NIE, and wondered how all these are going to be used. Wallrodt suggested that evaluation results be examined as they are available, especially for improving programs rather than for just influencing legislation.

Interaction with Employers/Unions. It was Wallrodt's opinion that vocational education has done well at keeping in touch with employers and unions, but it could probably do better. He thought that cooperative education should be expanded, suggesting a need assessment of cooperative education in new and expanding occupational areas. Also, suggested was a synthesis of the available evidence on how successful cooperative education has been. Wallrodt has the impression that in comparison to in-school instruction, cooperative programs have greater relevancy, their students are more motivated with better work habits and so forth.

Transition from School to Work. Another of Wallrodt's impressions which he would like to see tested concerns his feeling that vocational students seem to have an easier time moving from school to work. Is this true? If it is, what are the factors that account for it? What are the differences between the students who make the transition easily and those who do not? Here, too, Wallrodt would like to see a synthesis of the existing information and research directed to the unanswered questions.

Wallrodt asked whether the relationship between training and employment is an appropriate criterion of the effectiveness of vocational education. Are the students who enter and stay in related jobs necessarily better off than those who explore by moving from job to job? What are the value assumptions underlying the judgment that stability is better?

Because of the emphasis that local districts place on preparing students for local labor market needs, Wallrodt mentioned that former Congressman Pucinski has proposed a "Title 1" for vocational education. The money supplied under such an act would be used to provide a broad cross-section of training in skills that are not needed in particular local markets. Pucinski justifies such training by the high level of geographic mobility in young people.

William Woolf
Former Colorado State Director
Verification Interview
Vocational Education Needs and R & D Priorities
October 9, 1978

Morrison began the discussion with a brief description of the purpose of the study and the names of other individuals who are serving on the verification panel. Lewis then asked Woolf if, when he checked the needs which he considered most important to vocational education, was he indicating overall needs or those that are most important for R & D. Woolf replied that he chose needs for R & D and gave a brief description of the way he approaches problems. He said he constantly looks for a framework, an approach. He tries to take a long-range, macro view that is feasible, and his major objective is to keep students in tune with the labor market. In this context he explained why he checked funding as an R & D priority need.

Funding. Woolf thinks the methods that states use to allocate vocational education funds should be examined. He said there are probably three or four models used in different states throughout the nation. He suggested that a study be launched to identify these various models and to determine a rational, defensible basis for fund distribution. Project Baseline, said Woolf, made an attempt to collect descriptions of how the states allocate funds but the results were totally inadequate. What is needed, in Woolf's opinion, is analysis and model building to determine the most workable methods. Examples he cited were formulas based on FTE or ADA and excess costs. He asked if it is possible to determine the relative merits of each method, and if it is, then he felt a major objective should be to improve vocational education programming by improving funding systems.

Equipment and Facilities. Woolf thinks research is needed on equipment and facilities to eliminate the variation in local decision-making. In Woolf's view the field needs objective standards of an acceptable program. These standards would cover such things as equipment, square footage of floor space, and safety factors. An acceptable program would have to meet these minimum standards, but an LEA would be free to exceed them. Woolf thinks it would not be too difficult to arrive at the standards. He thinks a panel of business/industry and educational consultants could develop them and verification could then be carried out. Once such standards are available, they could be used for accreditation and evaluation. Without such standards, LEAs can excuse poor performance of students in their vocational programs by saying they do not have the proper equipment. Leaving decisions on equipment and facilities in the hands of the LEA is, in Woolf's judgment, inviting the kind of criticism that the GAO report produced.

Curriculum. Woolf feels vocational educators, relatively speaking, have the easiest task in all of education because they are training for particular finite jobs. He thinks there would be little argument on the basic skills that are needed for different jobs. Once these are identified, these are what vocational education should teach.

While competency-based instruction does attempt to identify and teach essential skills, Woolf claims that at the present time most developmental efforts are at the LEA level. He thinks they should be at the federal level to avoid cost inefficiencies and lack of standardization. He does not think this represents federal control. As with equipment and facilities, he sees the federal government assisting in the setting of minimum standards for programs.

Woolf believes the identification of skills to be taught has to be a federal effort because there are too many jobs being taught in vocational education for any LEA or state to make the effort needed to develop standards. Even the curriculum consortia cannot keep up. Woolf feels Congress should be pressed on these kinds of problems. The kinds of R & D curriculum approaches that are presently being funded are, in his opinion, unlikely to have any impact.

Data Collection and Evaluation. Woolf thinks the number one R & D priority--miles ahead of anything else--is better data on the supply of and demand for skilled workers, especially supply information. There are many different kinds of training programs and little data on how many trained workers are being prepared. Woolf feels it is critical for vocational education to stay in tune with the demands of the labor market, because if it gets out of tune, it will lose its categorical aid.

With regard to evaluation, Woolf feels that Congress was right on target with its requirements for evaluation, even though vocational education is being asked to meet a higher standard than the rest of education. He said we cannot hold teachers responsible for things (in the labor market) they cannot control. Woolf thinks vocational education should focus on student achievement -- that is, the field should be able to demonstrate the contribution of vocational programs by comparing the performance of students at the beginning and end of their training. Besides, in Woolf's opinion, follow-up data quality is "atrocious" in 45 out of 50 states. Follow-up studies should be continued but the quality should be improved.

Woolf had some brief comments on the following topics:

Planning. Congress is right and the Bureau is wrong. The Bureau through its check sheets and plan approval system is requiring documents that are not true plans. What is needed is planning that is useful for management.

Projected Manpower Demand and Supply. We need to know the demand for teachers and how this interfaces with demand and supply for skilled workers and program trainees.

Role of Federal, State, and Local Governments in Governance and Operation of Vocational Education. Everyone's expectations of what the other levels can and should do are unrealistic. There should be an analysis of who can do what best.

Political Strategies to Protect and Promote Vocational Education. Woolf feels categorical aid must be maintained. AVA has deteriorated in its political effectiveness and the Bureau is simply not effective. The field needs leadership. It does not have many people who realize the importance of power politics. Thirty years ago there was a much stronger power base with its roots in the agricultural states and state directors with long tenure. Presently agriculture, in general, has little political power and there are few directors who have held position for several years.

DETAILED CONTENT
ANALYSIS TABLES

Figure A-1.

Coded References to Major Needs in Vocational Education

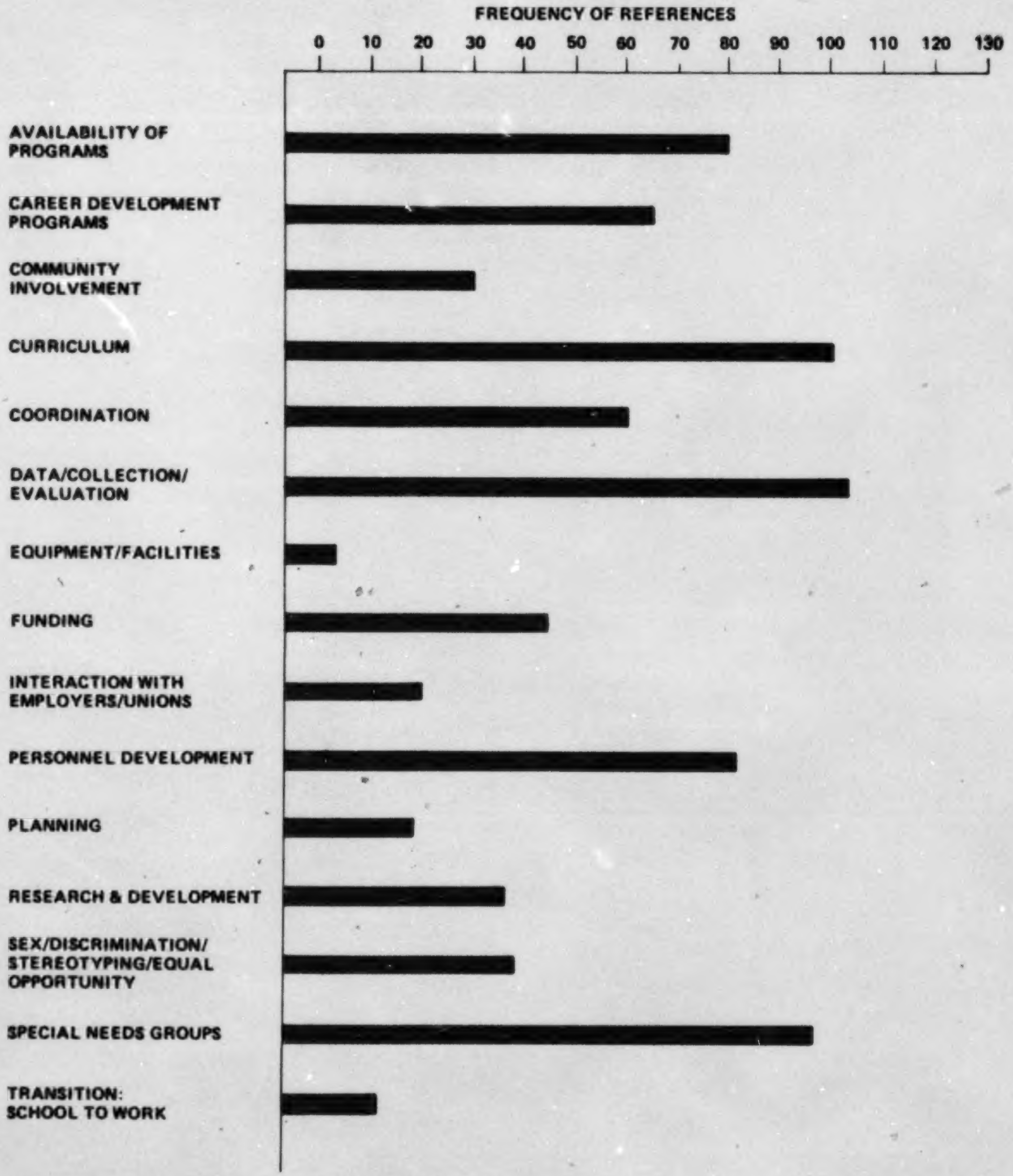

TABLE A-1

FREQUENCY OF CODING MAJOR NEEDS IN POLICY STATEMENTS

PERSISTENT AND PERVASIVE NEEDS	POLICY STATEMENTS						
	PL 94-482	Commentary: Jennings/Radcliffe	Impact of '68 Amendments: NACVE/SACVE Report	COVERD	GAO Report	NACVE Review of GAO	N.A.M. Report
1. Availability of Programs	11		1	1	17		
2. Career Development Programs	8		1	2	3	1	4
3. Community (citizen) Involvement, Participation, and Communication	5		1	2	10	4	1
4. Curriculum Content and Instruction	12	2		6	5	1	2
5. Coordination	5	2		3	25	1	1
6. Data Collection and Evaluation	13	5	5	27	25	3	4
7. Equipment and Facilities	2						
8. Funding		3	6	7	15	7	1
9. Interaction with Employers/Unions	4			2	5	1	2
10. Personnel Development	10	1		2			
11. Planning	3		3		10	3	
12. Research and Development	6	1	2	17			
13. Sex Discrimination and Sex Stereotyping	11	2	1	1	5		
14. Special Needs Group	15		1	5	1	2	1
15. Transition From School to Work	2		1	1	7		

TABLE A-2

FREQUENCY OF CODING SPECIFIC NEEDS IN POLICY STATEMENTS

	POLICY STATEMENTS						
PERSISTENT AND PERVASIVE NEEDS	PL 94-482	Commentary: Jennings/ Radcliffe	Impact of '68 Amendments: Report of NACVE/SACVE	COVERD	GAO Report	NACVE Review of GAO	N.A.N. Report
1. Availability of Programs							
a. adults			1	1	11		
b. post-secondary	2						
c. unemployed, out-of-school youth	2						
d. underemployed youth and adults who seek to progress in a career or change to a new career path	1						
e. locational barriers	1						
f. women	3						
g. other	2						
2. Career development programs					6		
a. career education programs							
b. vocational guidance and counseling	1		1	1			
c. development of positive work habits	7			1	1	1	
3. Community (citizen) Involvement, Participation and Communication					2		
a. establishing goals	1			1			
b. development of curriculum (advisory groups)	2				2		
c. evaluation of programs	1			1	6		
d. specific reference to NACVE	1		1		2	4	
e. specific reference to SACVE'S							
f. public image				3			
4. Curriculum Content and Instruction	8						
a. consumer and homemaking education	2						
b. energy education	2	2		1	5	1	
c. relevance				2			
d. other	1			1	13		
5. Coordination							
a. general education	3	1			3		
b. CETA/YEDPA (manpower) training					5	1	
c. articulation/coordination among secondary/post-secondary	1	1		2	4		
d. other	1	2	3	12	11	1	
6. Data Collection and Evaluation	4	1		3	1	1	1
a. more and better data	4	2		10	3		[illegible]
b. better evaluation of effectiveness, alternative criteria	4		2	2	10	1	1
c. better access to, utilization of data							
7. Equipment and Facilities	2						
a. renovate and remodel to meet today's needs							

TABLE A-2: (continued)

	PERSISTENT AND PERVASIVE NEEDS	POLICY STATEMENTS						
		PL 94-482	Commentary: Jennings/ Radcliffe	Impact of '68 Amendments: Report of NACVE/SACVE	COVERD	GAO Report	NACVE REVIEW of GAO	N.A.M. Report
8.	Funding			4			2	
	a. funds should be used more effectively					11		
	b. funding levels need to be known in advance		2	1				
	c. methods to insure compliance with use of federal funds regulations					4	3	
	d. other		1	1	7		2	
9.	Interaction with Employers/Unions	1				3	1	1
	a. more cooperative vocational education programs	1			2			1
	b. more work study programs	1				1		
	c. greater cooperation/coordination with labor unions to develop programs	1				1		
10.	Personnel Development	1	1					
	a. more women, ethnic group vocational education administrators				1			
	b. specific preparation for special areas of vocational education	9			1			
11.	Planning	3		2		7	2	
	a. all training resources considered in developing plans	3		1		3	1	
12.	Research and Development	3		1	5			
	a. dissemination and utilization	3	1	1	12			
13.	Sex Discrimination and Sex Stereotyping		2	1	1	5		
	a. sex discrimination/stereotyping should be overcome in vocational education programs	11						
	b. no one should be prevented from taking vocational courses on basis of race, ethnicity, or cultural origins							
14.	Special Needs Group				1			
	a. handicapped	2					1	
	b. disadvantaged	4			1		1	1
	c. bilingual	3						
	d. inmates of correctional institutes							
	e. women	2			1			
	f. other	4		1	2	1		
15.	Transition from School to Work							
	a. in-school preparation for transition							
	b. occupational adaptability and flexibility				1			
	c. job placement (and follow-through) services	2		1		7		

TABLE A-3

FREQUENCY OF CODING MAJOR NEEDS IN STUDIES, STATE PLANS, AND INDIVIDUAL PAPERS

PERSISTENT AND PERVASIVE NEEDS	IMPORTANT RESEARCH STUDIES, STATE PLANS, OTHER														PAPERS BY INDIVIDUAL AUTHOR
	Ellis	Morrison	Adams	Alabama	Arizona	Idaho	Kansas	Maine	New Jersey	Texas	Virginia	Wisconsin	Wyoming		Halperin
1. Availability of Programs	5	4	2	9	4	2			7	6	13	3	3		1
2. Career Development Programs	2	1	9	4	14	1	3	1	13	3	3	2	2		
3. Community (citizen) Involvement, Participation, and Communication	3	1	4								3				2
4. Curriculum Content and Instruction	1	6	3	5	17	5	7	1	23	3	5	1	6		4
5. Coordination	3	6	5		6	1	4			1	3	1			6
6. Data Collection and Evaluation		5	3	1	7	1	3	3	4	1	8	3			
7. Equipment and Facilities			1								1	1			
8. Funding		2	6		3		1	1	1		2	1			4
9. Interaction with Employers/Unions	2	5	2		7				4	1					
10. Personnel Development	1	10	10	2	19	1	9	2	7	4	18	2	1		1
11. Planning	1	1	1	1	3					1	2	1			1
12. Research and Development	1	3	1	1		1	5	3	4	1		2			1
13. Sex Discrimination and Sex Stereotyping		1		1	14	1	5	3	2	2	3	1			1
14. Special Needs Group	1	8	1	7	23	3	4	3	11	7	6	10	4		
15. Transition from School to Work	2	4	2		4				3		1				

TABLE A-4

FREQUENCY OF CODING SPECIFIC NEEDS IN STUDIES, STATE PLANS, AND INDIVIDUAL PAPERS

PERSISTENT AND PERVASIVE NEEDS	IMPORTANT RESEARCH STUDIES, STATE PLAN, OTHER													PAPERS BY INDIVIDUAL AUTHORS	
	Ellis	Morrison	Adams	Alabama	Arizona	Idaho	Kansas	Maine	New Jersey	Texas	Virginia	Wisconsin	Wyoming		Halperin
1. Availability of Programs	2		1	3					4	1	4	1			
a. adults	1	1		3					1	1	4		1		1
b. post-secondary	1	1		3	4				2	1	4	1	1		
c. unemployed, out-of-school youth			1												
d. underemployed youth and adults who seek to progress in or change careers										1					
e. locational barriers	1	2				2				2		2	1		
f. women											1				
g. other															
2. Career development programs				2					2	2	1				
a. career education programs	1		2						4		2		1		
b. vocational guidance and counseling		1	6	2	14	1	3	1	7	1		2	1		
c. development of positive work habits	1		1								2				
3. Community (citizen) Involvement, Participation and Communication	1										1				1
a. establishing goals															
b. development of curriculum (advisory groups)															
c. evaluation of programs															
d. specific reference to NACVE	1														
e. specific reference to SACVE'S	1														
f. public image		1	4												1
4. Curriculum Content and Instruction		4	2	2	7	1	4	1	4		4	1	4		
a. consumer and homemaking education				2	6	1			17	2	1		2		1
b. energy education					3				2	1					
c. relevance	1	2	1	1	1	3	3								2
d. other															1
5. Coordination							3				1				1
a. general education	2	2	5												
b. CETA/YEDPA (manpower) training	1					1				1	2				2
c. articulation/coordination among secondary/post-secondary		1			6										
d. other		3					1					1			3
6. Data Collection and Evaluation		2		1	6	1	1	1	2		3	1			
a. more and better data												1			
b. better evaluation of effectiveness, alternative criteria		3	1				2	2	1	1	3	1			1
c. better access to, utilization of data			2		1				1		2				
7. Equipment and Facilities			1								1	1			
a. renovate and remodel to meet today's needs															

TABLE A-4: (continued)

PERSISTENT AND PERVASIVE NEEDS	IMPORTANT RESEARCH STUDIES, STATE PLANS, OTHER													PAPERS BY INDIVIDUAL AUTHO	
	Ellis	Morrison	Adams	Alabama	Arizona	Idaho	Kansas	Maine	New Jersey	Texas	Virginia	Wisconsin	Wyoming		Halperin
8. Funding					2		1	1	1						
a. funds should be used more effectively		1			1						2	1			2
b. funding levels need to be known in advance															
c. methods to insure compliance with use of federal funds regulations		1	2												
d. other			4												
9. Interaction with Employers/Unions		2	2						2						2
a. more cooperative vocational education programs	1	1			4				1	1					
b. more work study programs	1	1			3										
c. greater cooperation/coordination with labor unions to develop programs		1							1						
10. Personnel Development															
a. more women, ethnic group, vocational education administrators	1	3	4	2	1	1	5	2	1	1	8		1		1
b. specific preparation for special areas of vocational education															
11. Planning		7	6		18		4		6	3	10	2			
a. all training resources considered in developing plans	1	1	1	1	3					1	2	1			1
12. Research and Development															
a. dissemination and utilization	1	2		1			5	1	4	1		2			1
13. Sex Discrimination and Sex Stereotyping		1	1			1		2							
a. overcome sex discrimination in vocational education programs				1	14	1	5	3	2	2	3	1			
b. no one should be prevented from taking vocational courses on the basis of race, ethnicity, or cultural origins		1													1
14. Special Needs Group															
a. handicapped					3		1	1							
b. disadvantaged		1		3	5		1	1	6	1	1	3	1		
c. bilingual	1	2	1	3	7	2		1	2	3	2	4	2		
d. inmates of correctional institutes		1			4	1	1		1			1	1		
e. women		1													
f. other					2				1	1					
15. Transition from School to Work		3			2		1		1	2	3	2			
a. in-school preparation for transition	1														
b. occupational adaptability and flexibility		1	2												
c. job placement (and follow-through) services	1	1													
		2			4										